Spring 1958

A Study of Institutional Stores Systems

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A STUDY OF INSTITUTIONAL STORES SYSTEMS

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A thesis presented to the Graduate Faculty of the Fort Hays Kansas State College in partial fulfillment of the requirements for the degree of Master of Science

by

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Date March 25, 1958

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ACKNOWLEDGMENTS

Many persons have rendered valuable assistance in the preparation of this study. The author expresses his sincere appreciation to Dr. Leonard W. Thompson and Dr. John D. Garwood for their professional guidence, to Mr. Walter E. Keating for his suggestions in constructing the questionnaire and presenting the problems and recommendations of the study, to Mr. Edward J. Urban and Mr. James M. Uht for reading the paper and making constructive criticisms, and to the many college business managers who replied to the questionnaire.

He is also grateful to his wife, Irene, for her encouragement, toleration, and help in the preparation and completion of this thesis.

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CHAPTER I

INTRODUCTION

The continual increase in enrollment and the enlargement of activities in colleges and universities have caused the purchasing, storing and issuing of materials efficiently to become more of a problem. The present procurement system becomes inadequate and inefficient. The question arises as to what should be done to improve the existing system?

Should central purchasing be initiated? Should a storeroom be maintained? Should storing of materials be centralized? What items should be stored for future use? These questions and many others need to be answered if an institution is to be run economically and efficiently.

No set procedures can be established as to how a procurement system should be operated that can be used by every institution as a guide in solving their procurement problems. This is because each institution is unique within its own environment. The problems will vary from school to school, depending upon its program, size, and other variables.[1]

The policies and procedures are established according to the objectives the procurement system is to accomplish.

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[1]Charles W. Hayes, "Inventory Control: No Place for Guesswork", College and University Business, Vol. 2, No. 2, February 1947, pg. 6-7.

The objectives should be the basis for any changes in a procurement system. If a procurement system does not satisfy an objective, a change should be made. The objectives need to be established so that a procurement system may operate in an optimum fashion. Objectives, definitely stated, are a necessity if this is to be accomplished.

The first objective should be to relieve the instructional and maintenance departments of the responsibility of obtaining materials that are necessary to satisfy their needs.[2] This responsibility will mean the maintenance of an even flow of materials to the departments as they need them. The storing of materials on the campus is necessary if transportation facilities are inadequate and when the source of supply is some distance.

The second objective which should be considered is the procurement of materials as economically as possible without sacrificing quality.[3] A central procurement system can best achieve this by pooling identical or similar requirements from various departments into combined orders so as to take advantage of quantity price brackets and other purchasing economies. The attainment of this objective may be facilitated by standardizing the use of commodities so that the

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[2]Charles W. Hayes, "Organization and Operation of a Receiving and Stores Department," Proceedings of the 29th Annual Convention of the National Association of Educational Buyers, May, 1950, pg. 40.

[3]Ibid., pg. 41.

variety will be sufficient to accomplish the purpose required by the institution in all of its phases.

The last objective to be considered here is with the continual growth of institutions, control, per se, becomes an objective of major importance.[4] This is true both financially and physically. Each department cannot spend the time necessary to see that its money is expended efficiently. In addition, it is not in a position to establish a control system to account for all the materials that are held in reserve. Control can best be initiated by delegating this responsibility to a department with the sole purpose of purchasing, storing and issuing materials.

These objectives are not the only ones and not always the ones of major importance but each objective presented here is general enough in nature to be a basis for a procurement system.

A stores department of some nature is necessary in the case of each of these objectives if they are going to be the basis for a procurement system. For example, the process of combining and pooling of orders is greatly facilitated if there is a central stockroom in which to deposit such materials and from which to issue them as needed.[5] The type and size

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[4]Hayes, op. cit., pg. 41.

[5]Leslie F. Robbins, "Centralized Purchasing and Central Stores Go Hand in Hand", College and University Business, Vol. 6, No. 5, May, 1949, pg. 14.

of a storage system poses a problem for most administrative officers. The types of storage systems are known along with the advantages of each. A practical problem arises in knowing which type of storage system is best suited for a particular institution.

I. PURPOSE OF STUDY

It is the purpose of this study to present the various policies and procedures for operating a stores system. Further to present the results of a survey of colleges and universities showing the type of stores system they maintain. And with this information make recommendations as to the type of stores system to establish for different sized institutions.

It is hoped that this study will provide information and guidance in establishing and operating a stores department in an institution of higher education. It is a general survey of practices and is not intended to be a manual of detailed procedures. Each institution should develop its own procedural manual for internal use.

II. ORGANIZATION OF STUDY

The study is arranged in a manner which will permit reading from the general to the specific. The second chapter deals with types of stores departments. The purpose of this chapter is to present the historical development of storage systems, to establish the different types of storage systems,

and to present the survey that was sent to colleges and universities. It is here that a general picture of the stores systems is presented along with the introduction of the survey.

Chapters three through five deal with specific subjects pertaining to a stores department. The third chapter is presented to determine what items should be included in a stores department. The fourth chapter will present the different mechanics of operating a stores department. The fifth chapter will present the different accounting systems and practices used in connection with a stores department. These three chapters will be based primarily on the findings of the survey. The sixth and last chapter is devoted to the writer's conclusions.

III. DEFINITIONS

The term institution in this thesis means only colleges and universities of higher education.

A procurement system will be defined as a method of purchasing, storing and issuing of materials efficiently. This term does not necessarily mean that it is centralized; as long as it involves all the above elements, it is classified as a procurement system.

A centralized purchasing department is defined as being a department with the sole responsibility of carrying out a procurement system.

A centralized stores department is a unit responsible for the storing of materials in one or more buildings under the supervision of a specialist in storing.

All other words having special definitions will be defined when they occur.

CHAPTER II

THE TYPES OF STORES DEPARTMENTS

Institutions have several ways of storing materials. The method of storing depends upon the objectives of the procurement system. When the program or size of an institution changes, it will be necessary to change the storing method to maintain these objectives.

There are basically four types of stores departments that are used by universities and colleges. The different stores departments have a definite relationship among one another. This is because each type is an expansion of the preceding one. They are as follows:

1. Laboratory Stores - A decentralized stores system with the actual physical control of the commodities under the control of the various departments where the supplies are used. Each department maintains its own stores department.
2. General Stores - A combination of decentralized and centralized stores system. When an item is in constant demand by more than one department, it is centralized. All other materials are decentralized.
3. Central Stores - All materials are centrally

stored in one building under the supervision of a single storeskeeper.

4. Division Stores - Materials are stored at several locations under centralized control. The purpose of this type of stores department is to locate materials close to where they are needed. This facilitates the quick delivery of materials.

I. THE HISTORICAL DEVELOPMENT OF STORES DEPARTMENTS

The first stage of the historical development of stores departments begins when an institution is first established. The departments or sub-divisions are delegated with the responsibility of storing their own materials. Usually the department head will be responsible for the receiving, storing, and distribution of materials. This method is used as long as a "hand-to-mouth procurement" is desired. The cost of storing is nominal and the control of the stores is determined and administered at the department level. There usually is no uniformity and the system is loosely controlled resulting in over stocking of materials and loss of materials due to theft.

As a school begins to grow, many items are in such demand that quantity discounts can be taken if the requests from several departments are combined into one order. Control is necessary to accomplish this economically. This can be best accomplished by centrally storing these items.

Centrally storing items in great demand is the second stage of the historical development. Materials of a similar nature are usually centralized as a unit. The most common materials are office supplies, janitorial supplies and maintenance supplies. Materials that are in small demand that are needed by only a few departments are left with the departments to store.

As a school continues to grow, the storing of materials becomes more of a problem. The third stage of the development of stores departments is complete centralization. A department is delegated with the responsibility of receiving, storing, and delivering materials.

Complete centralization makes available for immediate use many items which otherwise would have to be purchased separately through the usual procedure of requisition, bid, and purchase. Definite quantity levels can be established and maintained in centralized stores. This method also enables standardization of materials. It is not economical to stock several different brands of the same commodity. Departments will accept items issued from stores as "stock items" with less complaint than if they requisition some particular brand and it is switched by the purchasing agent when he places the order directly for the using department. The most important factor that causes centralization of all materials is the fact that central stores reduces the amount of clerical and paper work involved in purchasing.

The last stage of the stores evolution is the establishing of the warehouse close to the source of demand. When a physical plant grows so large that a centralized stores department is no longer closely located to all the departments it is to service, then the materials may be distributed to several locations. This will make possible more rapid delivery of materials to the requisitioning departments and will make possible the specialization in handling of materials. This is advantageous in the case of perishables and valuable materials.

The type of stores department in use as pointed out depends upon the requirements of the institution which is directly dependent upon its size.

II. PRESENTATION OF THE SURVEY

A survey in the form of a questionnaire was made to determine according to the size of the institution, what kind of stores departments colleges and universities maintain.

Several objectives were kept in mind in setting up the questionnaire. First, it was thought important to determine the number of each type of stores department in relation to different size schools. If there is a definite trend it would be easier to determine what stores department is best suited for a particular school.

Secondly, it seemed important to know what items are stored by schools and what determines what materials are stocked.

Do schools store all the materials necessary for their operation?

The third objective would be to determine the mechanics of the different stores departments in operation. There are different methods of operating a stores department and it seemed important to associate them with different types of stores.

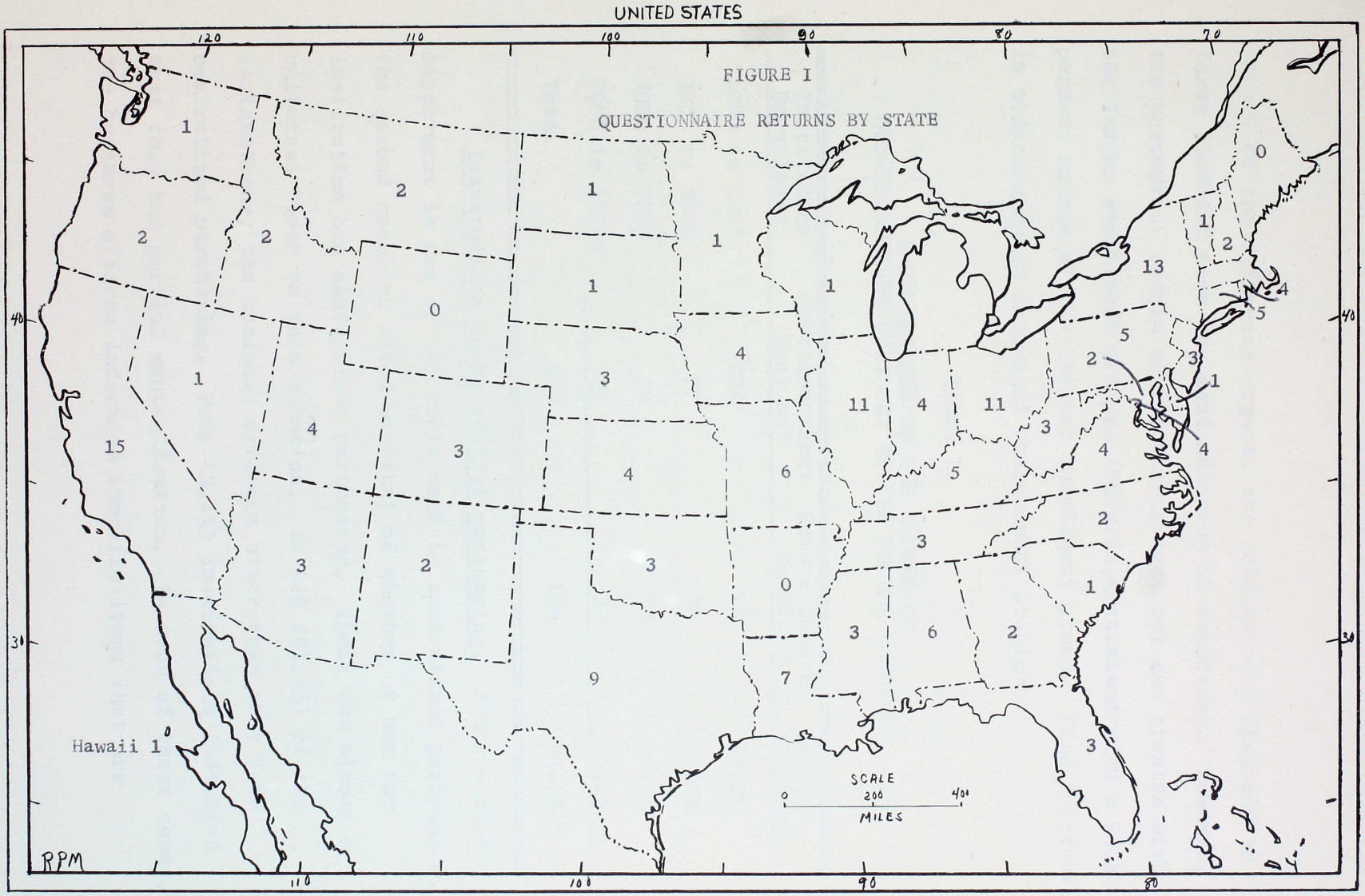
The last objective of the questionnaire was to determine the accounting methods used. The business officers were asked where the storeroom records were kept, the method of costing out materials and other questions which would show general practices. These officers were also asked to enclose samples of the forms used in their present system. A sample of this questionnaire is presented in appendix A.

With these objectives in mind the questionnaire was prepared and mailed to 290 colleges and universities in the United States. These were all the institutions with enrollments of one to ten thousand as published in the 1956-1957 Directory of Higher Education which is distributed by the U. S. Department of Health, Education, and Welfare. A list of these institutions by state is presented in appendix C. It was the writer's opinion that any school with an enrollment of less than a thousand would have very little to offer due to its size. On the other hand, schools over ten thousand enrollment are so few and their systems so large that they offer little help in establishing a trend.

The replies came from every section of the United States. This is shown on the map on page 13. The representation by state is complete except for Arkansas, Maine and Wyoming. The number of institutions reporting from any one state was in direct proportion to the number of schools in the state. This is presented to show that the findings of this survey are not the result of any particular section of the country.

Participation in the survey. There were 202 replies or 69.7 percent return of the 290 questionnaires sent out. Of the number returned, 92.1 percent completed the questions to the place that they could be used in the tabulation. The remaining 7.9 percent had various reasons for not completing the form. Many stated that they either had no stores system or their system was of such a small scale that the questionnaire was not applicable. A third of this group said that they were contemplating the establishment of a stores system and were interested in the results of this survey.

Participation according to the size of the enrollment. To definitely establish a method of comparing schools by size, the first question asked was the reporting school's 1956 fall enrollment. A tabulation of the replies by size in comparison with the number sent out is shown in table I. The institutions were divided into four groups. This was done to make possible the establishing of trends. The results of tabulation by enrollment groups is shown in appendix B according to the questions asked.


UNITED STATES
FIGURE I
QUESTIONNAIRE RETURNS BY STATE
120
110
100
90
80
70
50
40
30
1
2
2
2
1
1
1
0
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13
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2
4
5
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3
1
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11
4
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15
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3
3
2
3
0
1
3
6
2
9
7
3
Hawaii 1
SCALE
0
200
400
MILES
RPM

Of the different groups, the schools of a thousand to three thousand were the most numerous in reporting. However, the percent of return of the number sent out was greater with the larger enrollment groups. This is emphasized with a 95.1 percent return of the largest enrollment group. This interest is contributed to increased procurement problems.

TABLE I.

A COMPARISON OF THE NUMBER OF QUESTIONNAIRES SENT OUT TO THE NUMBER RETURNED

Institution Enrollment	Questionnaires Sent out	Questionnaires Returned	Percent Returned
1000 to 3000	134	74	55.2%
3000 to 5000	77	48	62.3%
5000 to 7000	38	25	65.7%
7000 to 10000	41	39	95.1%
Total	290	186	64.1%

Institutions using central purchasing. Since a stores department is one of the tools used in centralized purchasing, the second question asked was that of whether or not the institution has centralized purchasing. There was almost a universal "yes" to this question. In 140 (91.4%) of the institutions, the business officers state that they have centralized purchasing. Four (2.1%) institutions indicated that they had partial centralization. In each of these cases, the business officer indicated specific items that are

decentralized. The items for which the purchasing is delegated are books for the library, sheet music for the music department and fresh foods for the food service. A break down according to the size of the institution is shown in table II.

TABLE II

INSTITUTIONS USING CENTRAL PURCHASING

Possible Answers	Enrollment Groups				Total
	1-3000	3-5000	5-7000	7-10000	
Yes	65	44	22	39	170
No	6	3	3		12
Partial	3	1			4
Total	74	48	25	39	186

The type of stores departments used. In the first part of the chapter different types of stores departments were noted and the development of each discussed. This presentation of the stores departments was influenced by the results of the third question of the survey. This third question asked where the institutions store the materials that are held in reserve. The question was answered several ways; but each answer can be broken into four general categories. The distribution of different stores departments according to the size of the school is shown in table III.

The size of the school had no great amount of influence on the type of stores department that was used. A good

example of this is the fact that each of the four enrollment groups have all four types of the stores systems in their group. The number of stores departments of each type within each enrollment group vary according to the enrollment. For example: in the smallest enrollment there were 29 (39.2%) laboratory systems as compared to 4 (10.2%) in the largest enrollment group. This is emphasized graphically in figure II.

TABLE III

COMPARISON OF DIFFERENT TYPES OF STORES DEPARTMENTS IN RELATION TO DIFFERENT SIZE INSTITUTIONS

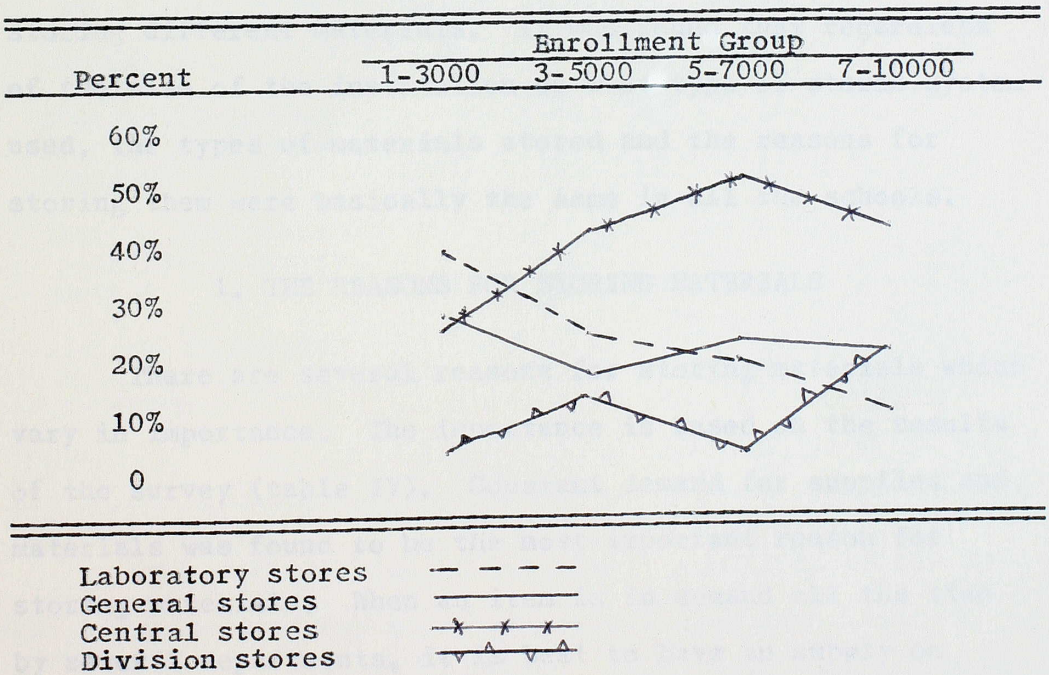
Type of Stores Department	Enrollment Group			
	1-3000	3-5000	5-7000	7-10000
Laboratory stores	29	12	5	4
General stores	21	9	6	9
Central stores	20	21	13	17
Division stores	4	6	1	9
Total	74	48	25	39

Of all the institutions reporting, 73.1% have some form of centralization in storing of materials. The percent using centralization increases with the larger enrollment groups. The first enrollment group of one thousand to three thousand caters basically to laboratory stores (39.2%) or general stores (28.4%). The second group of three thousand to five thousand enrollment mainly use central stores (43.7%) or laboratory stores (25%). The third group of five thousand

to seven thousand, like the second group, used central stores (52.0%) but changed by secondly using general stores (24.0%). The largest group of seven thousand to ten thousand used central stores (43.6%) mainly. General stores (23.1%) and division stores (23.1%) shared the honor of being the second most used stores. Of all the different types of stores used, central stores was the most widely used. Central stores accounted for 46.4 percent of all the stores used in the three larger enrollment groups.

FIGURE II

COMPARISON OF THE NUMBER OF DIFFERENT TYPES OF STORES IN EACH ENROLLMENT GROUP



CHAPTER III

WHAT ITEMS SHOULD BE INCLUDED IN A STORES DEPARTMENT

It is known that it is not good business, or even physically possible to stock every item used in an institution. It is therefore important to control the different items stored. To do this, definite reasons for storing should be established and should be used in determining what will be stocked.

The results of survey show that there is a definite trend in what materials are stored and the reasons for storing different materials. It was found that regardless of the size of the institution or what type of stores system used, the types of materials stored and the reasons for storing them were basically the same in all the schools.

1. THE REASONS FOR STORING MATERIALS

There are several reasons for storing materials which vary in importance. The importance is based on the results of the survey (table IV). Constant demand for supplies and materials was found to be the most important reason for storing materials. When an item is in demand all the time by several departments, it is best to have an supply on hand. The importance of materials will vary with different

departments but the need will not vary in relation to other reasons as a basis for storing. In fact, the importance of materials is the basis for establishing other reasons of lesser importance.

TABLE IV

THE IMPORTANCE OF REASONS FOR STORING MATERIALS

Reasons for Storing	Degree of Importance					
	1st	2nd	3rd	4th	5th	6th
Storing will cause standardization of materials used.	38	24	26	(40)	10	0
Storing will ease the purchasing operation.	10	25	(48)	40	7	0
Storing items that are in continuous demand.	(101)	41	17	4	0	0
Storing will make possible quantity buying.	21	(62)	40	19	1	0
Storing cost more than benefit received.	0	1	3	14	(81)	5
Others	1	2	1	1	1	0

If an institution is relatively isolated, it may even be necessary to carry more items and larger quantities in inventory than one which is located in a large metropolitan area. This reason for storing is emphasized in table IV

where 101 institutions indicated that this is the first reason for storing materials.

The second reason for storing materials is to try to reduce the cost of materials purchased. Definite cash savings can be made if materials are bought in large quantities. A vendor will reduce the price of commodities to encourage large lot buying. The storing of materials enables the buying of large quantities and the issuing of materials in smaller quantities to departments as needed. Special prices on commodities in off seasons can also be used advantageously when a storeroom is used. The problem of overstocking occurs some times when quantity buying is practiced. However, this can be overcome if maximum stock levels are established and used as a control.

The importance of some items in an institution's operation causes purchasing to become repetitious. Repetition increases the clerical and paper work in purchasing. To remedy this situation, storing on campus to relieve the purchasing operation becomes the third reason. Replenishment of the storeroom inventory can be done by buying in larger quantities and more items can be ordered at one time because there is a single replenishing station.

Standardization of materials is the fourth reason for maintaining different materials in the storeroom. It is will understood that departments will accept items that are classified as stock items with less complaint. This will

reduce the many preferences and prejudices of departments for particular items that tend to plague the business officer who is trying to spend authorized funds wisely. It is also obvious that it is not economical to buy and stock several different brands of the same commodity. The stocking of several brands would mean increased investment in a particular item. This would reduce the availability of funds that could be spent on items of like importance.

The cost of storing materials was sighted in the survey as the least in importance of the major reasons for storing. The reason has a negative approach because an item will not be stored if the cost of storing is more than the benefit received by having it in stock. It is believed that this reason should have been rated higher in relation to other reasons. Business officers lose sight of the fact that it costs far more to store, keep inventory records, and issue items than is saved by handling several smaller orders placed directly for several departments during a fiscal period. Inventory investment should include the cost of storing. Funds made available to be used for a definite period for the operation of a institution should be utilized in that period. Unless the turnover of inventory is enough to benefit from funds expended within the established period, the cost of goods used will exceed the benefit of storing. Where the cost is more, direct purchasing should be utilized even if the purchasing operation becomes a greater problem. Unless this

approach is used in figuring the cost of inventory investment, inequality will occur in figuring the cost of operation on a yearly or fiscal basis.

The major reasons for storing are not independent of each other. All the reasons are dependent upon whether the item being stored is important enough to be considered by other reasons as a storing item. Quantity buying is dependent upon standardization to make the demand for a particular item sufficient to make possible such buying. Easing the purchasing operation needs the help of quantity buying to reduce the number of purchase orders. Each reason can be sighted as dependent upon one or more other reasons. In considering the reasons for storing, this fact should be considered before any reason is eliminated as a storing reason.

Reasons for storing materials of minor importance as indicated in the survey are:

1. The available space for storing purposes determines the items stored.
2. Materials will be stored if they are needed for emergency repairs.
3. Materials will be stored if requested by a department.
4. All materials that are not conveniently available locally are stored.
5. All office supplies are stored.

The importance of the minor reasons are due to the institution's environment and they wouldn't be justifiable as a reason for

storing in the majority of schools. At the same time, the major reasons for storing are general enough in nature to be adapted to any stores system. Furthermore, the order of importance in which the major reasons were presented may not be best for a particular institution, but because of the general opinion, it is felt that the reasons should first be considered in this order and should be the basis for storing materials.

2. TYPES OF MATERIALS TO STORE

Because it would be almost impossible to discuss each item used by an institution, materials are classified according to how it is used to evaluate its importance as a material for storing. The question arises as to whether different classes of materials should be stored until needed or ordered as desired. This problem can be answered by evaluating the class of materials against the reasons for storing as presented in the fore part of this chapter. If a particular class of materials can be justified by these reasons, then it is a matter of determining the items to be stored within a general class. The determination should be based upon the requests of the departments using the items. Past purchases, present demands, and further plans for change are the basis for this determination. When a stores system has been in operation for some time, the rate of turnover will also be justification for storing different materials.

There are basically six classes of materials. They are as follows:

1. Office supplies - paper, ink, stencils, carbon paper, etc.

2. Classroom supplies - chemicals, typewriters, and other apparatus.

3. Maintenance supplies - pipe, paint, repair parts, etc.

4. Janitorial supplies - soap, wax, mops, toilet paper, light bulbs, etc.

5. Cafeteria or dining hall supplies - food, dishes, silver, etc.

6. Office furniture, fixtures and equipment.

The majority of schools indicated in the survey that they maintain storerooms for office supplies, janitorial supplies, and maintenance supplies. This is attributed to the fact that these supplies are in constant demand, can easily be standardized and large monetary savings can be made by quantity purchasing these items. As shown in table V this is true regardless of the type of stores system used.

Classroom supplies and cafeteria supplies have low storage percentages which indicates that they are not adapted as readily for storing purposes.

The reason for not storing classroom supplies is that there are not enough materials needed to maintain a storeroom and the number of departments needing like materials are so few that what materials that are needed can easier be departmentally stored. This is emphasized by the fact that classroom

supplies are stored where laboratory systems are used by a large percentage than in other systems.

TABLE V

THE INSTITUTIONS STORING DIFFERENT TYPES OF MATERIALS BY STORES SYSTEM

Materials	Stores Systems				Total
	Lab.	Gen.	Cen.	Div.	
Office supplies	76.0%	77.8%	88.7%	100.0%	83.8%
Classroom supplies	42.0%	20.0%	36.6%	65.0%	37.1%
Maintenance supplies	78.0%	55.6%	84.5%	95.0%	76.9%
Janitorial supplies	80.0%	42.2%	95.8%	95.0%	78.5%
Cafeteria supplies	62.0%	4.4%	29.6%	65.0%	36.0%
Office furniture			2.8%		1.1%

There are two reasons for not storing cafeteria supplies. First, food with the exception of canned goods are perishables and will not keep long enough to store except for a short time. Second, the available sources of supply are such that supplies may be delivered daily making it unecessary to maintain a elaborate stores system. If an institution has several dining halls, it is advisable to maintain a central stores system in which to make possible quantity purchasing of canned goods. Large savings can be made in buying of canned goods in large lots.

In the case of office furniture, fixtures and equipment

only 1.1% percent of the institutions indicated that they maintained a reserve supply. This is such a small percentage that any justification for such a storeroom classification could be justified only if it is desired by the administration. The low percentage can be contributed to the fact that such an inventory would involve considerable investment and the turnover is very slow.

It is contended that there are more institutions than indicated that actually carry office furniture in their storeroom. This is stated on the basis that there probably are a very small number of such items maintained in stock and are classified as office supplies rather than set them up as a separate classification.

CHAPTER IV

STOREROOM PHYSICAL CONTROL

The procedures of storing materials should be well planned if satifactory results are to be obtained. Service and safety should be the main objectives in planning the physical control of a storeroom.

A procurement system relieves the department of the responsibility of procuring and storing materials until they are needed. Some form of a storeroom is needed to have materials available when the departments request materials. The service that is provided through the management of a storeroom is then of utmost importance.

Safety of the materials stored in a storeroom is of equal importance as an objective in the operation of a storeroom. The physical environment will have to be well planned to guard against loss of materials. Loss due to fire and flood hazards, theft, age, and obsolescence are some of the elements for which preventive planning should be initiated. This planning should include adequate storage facilities, reliable personnel, and well organized storing procedures.

The importance of operating a storeroom can be emphasized by several quotations from the questionnaire. The Bakersfield College questionnaire stated that it was

very important to have a good warehouse, to have it well equipped, and to have established reasonable procedures and plans for audit. The Long Beach State College questionnaire stated that the institution should be sure that its storeroom is large enough for further expansion, and that there should be a specific person in charge of the storeroom. Downs University also stated that the stock clerk should be of such caliber that he will be very accurate. New items should be carefully considered before they are put into stock. Slow moving items are difficult to remove once they are in inventory.

The operation of a laboratory stores system is insignificant because of its size and its general purpose. The materials are stored usually on a temporary basis with no established inventory control and the responsibility is loosely enforced; therefore, physical planning has no value. With the establishment of a department with the sole responsibility of receiving, storing, and issuing materials that are to be used by other departments, the system becomes more complex and definite physical control should be established. The physical control of a storeroom needs to be initiated in the General, Central, and Division Stores Systems.

Any system of stores physical control is predicated on orderly storage of materials. This involves attention to the facilities, procedures, and the supervision. The establishing of the storage facilities and the storing procedures will determine the degree of safety that is initiated. Therefore,

the service that is offered will be determined by the supervision.

1. HOW MATERIALS SHOULD BE STORED

Storage Facilities. Very little can be said about how wide, how high, and where the door should be when it comes to planning and establishing the warehouse structure and its furnishings. This is because storage facilities are costly. The availability of funds and the possible modification of existing facilities determine storage space.

For the safety of materials stored, every effort should be made to provide adequate storage facilities. It is foolish to store some commodities in unheated buildings. If the commodities cannot be correctly stored, they will often be covered up and will become obsolete through over-aging. If materials can not be isolated, control will be impossible. And space for further expansion should be planned into storage facilities.

Locating materials within available facilities. The storage facilities must be adapted to the type of materials handled which will include racks, bins, tanks, shelving, trays, platforms, and floor space, all numbered or otherwise identified as to specific location. Materials are assigned to these locations, all quantities of a given item kept together, and each item always at the specified location. The arrangement will follow, as closely as possible, a commodity classification.

These considerations facilitate the physical handling of the stock. The layout of the storeroom should also take into account aisle space for the use of hand lift trucks and similar mechanical devices.

Unit piling. Stores physical control is further facilitated by unit storage or piling so as to give a quick visual count of materials on hand. With a uniform arrangement of twenty units in a layer, for example and with markers inserted at each fifth layer, an accurate count of several thousand units is possible at a glance. This principal of piling and visual count can be applied to any number of units.

Minimum indicators. It is customary also to use a marker of special color as a visual indicator to designate the ordering point or minimum reserve stock when supplies of a given item are approaching the danger point and are in need of replenishment. This is an effective tool in Dollar Control Accounting which will be explained later. On small bulk items where such an arrangement is not practicable, the minimum reserve quantity may be segregated in a bag, box or other package and kept with the remainder of the stock. When it becomes necessary to open this package in order to fill a requisition, the recorder point is similarly indicated.

Bin tags. A running inventory of each item can be maintained by using bin tags attached to each storage location, carrying entries of each addition to stock and issue from stock, and the balance on hand. Since bin tags can be used

in both Dollar Control Accounting and Item Control Accounting with a certain degree of success, the business officers were asked in the survey whether they used bin tags to maintain a physical count of materials. This question was asked with interest because bin tags are time consuming. Every time units are added or issued, the bin tag must be adjusted. This takes time and will be over-looked if speed is of an essence. It was found as a result of survey that only 23.1% of the institutions use bin tags. Of this group several stated that they used them only as an aid in taking their annual inventory. Others indicated that bin tags were used only on broken lot storage. It was noted that of the group using bin tags, 58.1% of the institutions used a central stores system. As a result of this survey, it is suggested that bin tags be used only for special situations but should be kept in mind as a method of keeping a running inventory which can be used in close association with the actual stock.

The stores reservior. In a stores operation, maximum and minimum inventory based on institutional experience should be established for each item stocked and should be periodically reviewed. When the quantity on hand reaches the predetermined minimum, the need for replenishment should be examined with the major using departments before a purchase order is issued. A purchase should not exceed the established maximum inventory level. Without such a control, serious overstocking or understocking may result.

The results of question eleven of the survey indicates the importance of maximum-minimum control. Two-thirds of the institutions that answered the question indicated that they have a maximum and minimum inventory control. The results further indicated that this control is used increasingly in centrally controlled stores systems and in the larger enrollment groups. This is due to increased number of items stored which makes visual control impossible. Maximum and minimum inventory control adapts itself nicely to Item Control accounting. These trends in reservior control is readily seen in table VI.

TABLE VI

INSTITUTIONS USING MAXIMUM AND MINIMUM INVENTORY CONTROLS BY ENROLLMENT GROUPS

Enrollment Group	Yes	No	Didn't Answer
1000 to 3000	44.6%	36.5%	18.9%
3000 to 5000	52.1%	33.3%	14.6%
5000 to 7000	68.0%	20.0%	12.0%
7000 to 10000	84.6%	10.3%	5.1%
Total Enrollments	58.1%	28.0%	13.9%

Personnel. The service rendered by a stores system is dependent upon the personnel. Personnel is required to make a system function. Definite standards should be established in qualifying employees to insure a high quality of service.

First, a storekeeper should be honest. He will have thousands of dollars worth of commodities under his care. Second, the storekeeper must be a good housekeeper. Proper handling and care of materials are necessary to maintain the value invested in a inventory. Third, a storekeeper must be accurate. He must be able to keep the stores records accurately to insure proper fiscal control of the inventory. Fourth, the storekeeper must be familar with the materials stored. He should be capable of taking the responsibility of the operation of the storeroom. He can best do this by knowing something about the commodities stored. He should be able to suggest substitutions, be able to give advice as to quantities required, quality needed and other purchasing factors. He should be able to fill orders quickly and correctly. And lastly, a storekeeper should be able to meet people. He needs to be courteous. He should be able to handle complaints.[1]

The number of employees needed in a storeroom is dependent upon its size and the availability of funds for the payment of their wages. How many employees needed should be determined by the number necessary to provide the service desired from a stores system.

The number of employees used in institutions contributing to the survey vary with the system used and with the size of

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[1]John F. Rhilinger, "Inventories Purchase and Control," Proceedings of the 34th Annual Contention of the National Convention of the National Association of Education Buyers, (New York: National Association of Education Buyers, 1955), p 63.

the institution. Two employees were the most popular number of employees used in operating a storeroom. Three was next and then one. The enrollment groups from one thousand to five thousand employ one to three people. The larger enrollment groups used varying numbers of employees. This is apparent in table VII.

TABLE VII

THE NUMBER OF EMPLOYEES USED IN A STOREROOM ACCORDING TO THE SIZE OF THE INSTITUTION

Number Employeed	Enrollment Groups				Total
	1-3000	3-5000	5-7000	7-10000	
1	14	3	3	4	24
2	13	15	6	5	39
3	12	5	3	6	26
4	4	4	2	3	13
5	2	7	2	2	13
6	3	2	1	2	8
7				1	1
8		1		2	3
9	1	1	2	1	5
10		1		2	3
11				1	1
14				1	1
15				1	1
20		1		1	2
23				1	1
25				2	2
35				1	1
None	6	2			8
No answer	19	6	6	3	34

The type of stores system according to survey determines the number of employees used. It was found that employees were reported as not being used, in most cases, in the laboratory stores system. Central storing used two employees in more

cases than any other system or within the central stores system. There were more employees used in central storerooms than any other system because the delegation of authority in operating a storeroom to other than a storekeeper would not be possible. General stores followed the pattern set up by central stores but on a smaller scale. In Division stores the number of employees used varied more than any other system. These trends are shown in table VIII.

TABLE VIII

THE NUMBER OF EMPLOYEES USED IN DIFFERENT STORES SYSTEMS

Number Employed	Stores System				Total
	Lab.	Gen.	Cen.	Div.	
1	3	7	11	3	24
2	7	7	24	1	39
3	5	7	13	1	26
4	3	3	7		13
5	1	5	4	3	13
6	1	1	3	3	8
7	1				1
8		1	1	1	3
9	1	1	1	2	5
10		1	1	1	3
11				1	1
14			1		1
15		1			1
20			1	1	2
23				1	1
25			1	1	2
35			1		1
None	8				8
No answer	20	10	3	1	34

From this survey it can be generally stated that with the use of a centrally controlled system, at least one or

more employees are used. With the increase in enrollment, additional employees are used, two being the most popular.

Responsibility. The question arises as to where in the hierarchy of the institution should the authority and the responsibility of the storeroom be placed. Since a stores system is a tool of the procurement system, this responsibility should be placed orginally with the head of the procurement system. Whether this head should delegate his authority to a subordinate creates the real problem. To determine how colleges and institutions handle this problem, question ten of the survey asked the business officers to give the title of the person who is responsible for maintaining their storeroom. There were twenty-four titles given the person holding this position. These titles are of such a nature that they can be grouped into three general catogeries having similar positions in the institutions hierarchy. Two groups are directly associated with the procurement system and the third is indirectly associated. The third group has other primary responsibilities and the storeroom responsibility is an additional duty. The procurement groups are the heads of the procurement system and their subordinates.

It was found that the responsibility was delegated in 68% percent of the institutions with 67% of this delegation to subordinates and the remaining 32% going to others. Procurement heads maintain control on a bigger percentage in institutions having small enrollments and when laboratory

TABLE IX

INSTITUTION PERSONNEL HOLDING THE RESPONSIBILITY OF THE STOREROOM BY STORES SYSTEM

Title	Stores System				
	Lab.	Gen.	Cen.	Gen.	Total
1. Procurement Head	10	13	20	7	50
1. Bursar		1			1
2. Business Manager	4	3	4	1	12
3. Comptroller			1		1
4. Dir. of Stores & Purchasing			1		1
5. Purchasing Agent	6	9	14	6	35
2. Procurement Head Subordinate	3	13	44	12	72
1. Assistant Business Manager		1			1
2. Assistant Purchasing Agent	1	1	2		4
3. Central Stores Superintendent			7	1	8
4. Chief Clerk of Supply Stores			1		1
5. Clerk				3	3
6. Property Accountant			1	1	2
7. Stock Clerk		3	12		15
8. Storekeeper	2	4	11	7	24
9. Storeroom Manager		2	2		4
10. Superintendent of Operation			1		1
11. Superintendent of Stores		2			2
12. Supervisor of Receiving & Distribution			3		3
13. Warehouseman			4		4
3. Others	19	10	5		34
1. Book Store Manager	3	5			8
2. Chief Accountant	1				1
3. Department Assistant	1				1
4. Department Head	10	1			11
5. Dir. of College Information			1		1
6. Superintendent of Bldgs. & Grounds	4	4	4		12
4. Didn't Answer	18	9	2	1	30

TABLE X

INSTITUTIONAL PERSONNEL HOLDING THE RESPONSIBILITY OF STORING MATERIALS BY ENROLLMENT GROUP

Title	Enrollment Group* 1-3	3-5	5-7	7-10	Total
1. Procurement Head	25	13	3	9	50
1. Bursar		1			1
2. Business Manager	9	2		1	12
3. Comptroller	1				1
4. Dir. of Stores & Purchasing	1				1
5. Purchasing Agent	25	13	3	8	35
2. Procurement Head Subordinate	20	19	9	24	72
1. Assistant Business Manager	1				1
2. Assistant Purchasing Agent	2		1	1	4
3. Central Stores Superintendent		1		7	8
4. Chief Clerk of Supply Stores	1				1
5. Clerk	1	2			3
6. Property Accountant	1		1		2
7. Stock Clerk	4	10		1	15
8. Storekeeper	5	2	6	11	24
9. Storeroom Manager	2	2			4
10. Superintendent of Operation				1	1
11. Superintendent of Stores				2	2
12. Supervisor of Receiving & Distribution	2	1			3
13. Warehouseman	1	1	1	1	4
3. Others	13	7	8	6	34
1. Book Store Manager	3	3		2	8
2. Chief Accountant	1				1
3. Department Assistant	1				1
4. Department Head	1	3	4	3	11
5. Dir. of College Information			1		1
6. Superintendent of Bldgs. & Grounds	7	1	3	1	12
4. Didn't Answer	16	9	5		34

*The enrollment groups indicate thousands

and general stores system are used. When responsibility is delegated in a laboratory stores system, the procurement head delegates to others than subordinates. As the enrollment group becomes larger, the delegation of responsibility increases. It is noted that delegation to subordinates becomes more important and the delegation to others becomes of lesser importance as the enrollment grows.

The title of the responsible person popular in the procurement head group is "Purchasing Agent", "Storekeeper" and "Stock Clerk" were the titles most used in the subordinate group, and "Superintendent of Buildings and Grounds" was delegated with the responsibility of the storeroom in more cases in the third group. The "Superintendent of Buildings and Grounds" is primarily concerned with providing service and maintenance to the academic and administrative departments and a stores system fits in with this operation.

2. RECEIVING AND DISTRIBUTING MATERIALS

Proper consideration of the receiving and distributing of materials will complete the physical control of a storeroom. Well planned receiving and distributing of materials will result in prompt handling of orders by vendors and confidence in the routing of the procurement system by the requisitioning departments.

Planning isn't as important in a laboratory stores system as in the central controlled systems because the using

department has direct control of the materials. This doesn't mean that the laboratory stores system is better. Actually this system will become inferior when the institution grows in size and the storing of materials become a perplex job due to the number of materials that require storing.

Methods of receiving materials. Two methods are used by institutions in receiving materials. In many institutions, the goods are delivered directly to the requesting department where they are checked in. This system is expedient and the cost of receiving is nominal. Receiving in other schools is centralized. This method is usually coordinated with the established stores system. By centralizing receiving of all materials, the school is assured that goods paid for are received in good condition. Scientific inspection is made by the receiving clerk to test compliance with the specifications of the purchase order. Under the central receiving plan, the department head may rely to a certain extent on the receiving clerk and will not have to examine the contents of every package as soon as it is delivered. Under the plan of decentralized receiving, there may be delay in getting the receiving report approved and returned to the business office by the department head. Delays occasioned by this practice lead to lost discounts and past due accounts. The chief disadvantage of the central receiving plan is cost of operation.

Centralization need not be absolute. Materials of a technical nature such as chemicals, sheet music and books

should be left to the departments to check in. They will have better qualified personnel to handle these items. Prearranged procedures on how technical materials should be handled should be established with the receiving unit being responsible only for delivery of materials to the right department.

Regardless of the receiving method used, the receiving area should be separated from the stores area to insure that no materials are stored before they are properly checked in. When central receiving and a centralized stores system are together, extra precautions should be taken to see that materials assigned directly to departments do not find their way into the stores area. The best way to avoid this is to make daily deliveries to the departments.

The receiving procedures in a stores department will depend upon the accounting system used. Therefore, the procedures of receiving will be discussed in chapter five along with the accounting systems.

The necessary authority to transfer materials. With the establishment of a general, central, or division stores system the distribution of materials should be based on definite established procedures to guarrantee satisfactory service and the proper transfer of accountability of materials. When a department head requires a particular commodity from an institution storeroom, he should submit a formal stores requisition. To speed up the distribution of materials, availability

of funds should be established prior to the request. This is justifiable on the grounds that a system which compels the department head to obtain the approval of the business office on stores requisitions is awkward and inconvenient. Usually the department wants the items from stores immediately. Routing the requisition through the regular channels would disrupt the routine of both the business office and the requesting department. An encumbrance authorization should be requested by the department head for different classes of materials on a quarterly basis. The encumbrance authorization should be reduced as requisitions are filled until all funds are exhausted. If additional funds are needed in a particular quarter, the department should request supplemental funds be added to the existing encumbrance authorization. The unused balances of the encumbrance authorization can be returned at the end of the quarter with the completed requisitions as justification for the transfering of materials by the accounting department. This system will enable the business office to maintain budgetary control over the departments without restricting the service of the storeroom.

Stores catalogs. To improve the distribution system, some institutions use a stores catalog to keep the department informed as to what materials are available. The catalog is not too widely utilized because of the cost of cataloging, publishing, and maintaining it up to date. The results of question six of the survey proved this. Of the 186 schools

reporting only 22% of the schools used a stores catalog. The use of a catalog was not used enough to justify its use except in the larger enrollment group as shown in table XI and in the central stores system and the division stores system as shown in table XII.

TABLE XI

INSTITUTIONS USING STORES CATALOGS BY ENROLLMENT GROUPS

Possible Answers	Enrollment Group				Total
	1-3000	3-5000	5-7000	7-10000	
Yes	8	11	5	17	41
No	59	36	20	20	135
Didn't Answer	7	1		2	10
Total	74	48	25	39	186

When a catalog is used, it should be issued in sections. Sections should be issued according to commodity classifications. This will reduce the cost of materials and printing by reducing the size and the number of catalogs. Items should be cataloged by number to facilitate requisitioning, issuing, and record posting. This can be effectively used in Item Control accounting. It will also reduce the amount of writing necessary in making a requisition if a number is used instead of a word discription. A item number should be such that it will indicate to the storeroom clerk the location of the item in the warehouse. Space

should be left in the numbering system so that additional items can be placed in the proper commodity groups and that the catalog should be kept up to date for the benefit of the using department with periodic revisions. The catalog should show standard package quantities, minimum issue quantities, and the unit price to the department.

TABLE XII

INSTITUTIONS USING STORES CATALOGS BY STORES SYSTEM

Possible Answers	Stores System				Total
	Lab.	Gen.	Cen.	Div.	
Yes	1	8	24	8	41
No	42	34	47	12	135
Didn't Answer	7	3			10
Total	50	45	71	20	186

A special commodity catalog is justifable when several departments demand similar materials regularly from a centrally controlled stores system. Office supplies are the most frequently cataloged of the different catalogs which were returned with the survey. It was also noted that the catalogs were mainly mimeographed to keep the printing costs down.

Delivering of materials. The problem also arises in distributing of materials as to whether a department should go to the stores department for their supplies or whether the

stores department should deliver the materials to the requisitioning department. If the stores department delivers requisitioned items, the departments will be allowed more time for their primary duties. When a department picks up materials, the cost of operating a storeroom will be less and obtaining materials will be immediate.

Question seven of the survey asked the procedure used by the institutions in deliverying materials. It was found that there were three methods. Institutions indicated in 37.1% of the returns that materials were delivered to the departments, 32.8% of the institutions let the departments call for the materials, and 24.2% of the returns showed that a combination of both of the above methods were used. Primarily delivery is made and materials are called for only in an emergency in the combination method of delivering. This distribution is shown according to enrollment groups in table XIII.

As the enrollment groups become larger, the use of a delivery system increases. This is attributed to the fact that the laboratory stores system where delivery is not a problem is not used as often. There is a definite delivery system pattern used in conjunction with the different stores. This is evident in table XIV.

TABLE XIII

THE PROCEDURE USED IN DELIVERING MATERIALS TO DEPARTMENTS BY ENROLLMENT GROUP

Method Used	Enrollment Group				Total
	1-3000	3-5000	5-7000	7-10000	
Delivered	24.3%	52.1%	36.0%	43.6%	37.1%
Called for	50.0%	29.2%	24.0%	10.3%	32.8%
Combination of above	14.9%	12.5%	40.0%	46.1%	24.2%
Didn't Answer	10.8%	6.2%			5.9%

TABLE XIV

THE PROCEDURE USED IN DELIVERING MATERIALS TO DEPARTMENTS BY STORES SYSTEM

Method Used	Stores System				Total
	Lab.	Gen.	Cen.	Div.	
Delivered	14.0%	42.3%	53.5%	25.0%	27.1%
Called for	54.0%	33.3%	16.9%	35.0%	32.8%
Combination of Above	10.0%	22.2%	29.6%	40.0%	24.2%
Didn't Answer	20.0%	2.2%			5.9%

CHAPTER V

STOREROOM RECORD CONTROL

The primary problem involved in a system of storerooms is inventory control.[1] There are basically two reasons for inventory control. The first reason is that inventory control provides a means of safeguarding supplies and materials stored on campus. These supplies and materials having a monetary value should be controlled and checked as cash transactions.

The second reason is that inventory control provides an accounting routine for supplies and materials without which accurate determination of costs is impossible. At no given time can the demand for commodities by a department be anticipated accurately; therefore, the exact amount that will be needed cannot be requisitioned and purchased. Furthermore, since quantity purchasing results in lower unit costs, it is necessary to charge materials to departments, not as purchased, but as used. This is accomplished through a system of inventory accounting under which standard commodities are bought in large quantities and placed in storerooms until requisitioned by departments for immediate use. Goods purchased

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[1]Clarence Scheps, Accounting for Colleges and Universities (Baton Rouge: Louisiana State University Press, 1949), p. 51.

remain charged to inventory accounts until requisitioned by departments, when they are charged to the appropriation account of the proper department.

Inventory control can be accomplished by two means--Dollar Control Accounting and Item Control Accounting. The system used depends upon the size of the institution and how detailed the schools wish to carry out the inventory control. In Dollar Control Accounting, valuation is the inventory control. In Item Control Accounting, individual item accountability is the inventory control.

Dollar Control Accounting is the simpler and the easier to administer. Maximum-minimum quantity control of individual items are maintained by the storeroom clerk by visual inspection. As long as there are only a small number of items stored, this can be done easily without any loss of efficiency. A shortage can be detected readily when there is a difference between the control account and the actual warehouse valuation. It is contended that no more can be done with the knowledge that three cases of a particular item are missing than can be done with the information that the storeroom is short $25.00. Either information will indicate that the storeroom is short and remedial action is necessary.

Inventory control in Item Control Accounting affords closer control of individual items. This is important when visual inspection becomes impossible with the increasing number of materials stored. A perpetual inventory card is

kept for each commodity in inventory in Item Control Accounting. This makes possible complete current stores information, both physical and financial, in record form. Maximum-minimum inventory control can be maintained from the cards, making visual inspection unnecessary. Trends can be established for single items or for groups according to commodity classification which are helpful in the future operation of a stores system. And, stock levels can be established which will help to avoid "Stock-outs", and/or obsolescence of materials.

1. DOLLAR CONTROL ACCOUNTING

Accounting control over inventories kept in storerooms is secured through use of a general ledger. This ledger called Stores Control Account is in the form of a "T" account. It is maintained in the business office. All purchases of materials by the storeroom are debited to the account and all requisitions of materials by the storeroom are credited to the account. Control over the storeroom is established by comparing the stores control account balance against the total valuation of materials in the storeroom. This value is taken from the prices stamped on the materials in the storeroom.

How materials are priced. When materials are placed in stock, they are stamped with the price. The price placed

on the materials should agree with the amount posted to the Stores Control Account for the same materials. This establishes the control on materials that are entered into stock.

Since the amount posted to the Stores Control Account will be taken from the paid purchase orders which will be based upon the vendor's invoices, all pricing can be done according to these invoices. To expedite the pricing of materials, vendors should be directed to enclose a copy of the invoice with the merchandise when it is shipped to the stores department. This will allow immediate pricing. Furthermore, to facilitate costing under this system, every effort should be made to obtain goods F.O.B. destination so that freight charges will not have to be added to the unit price.

If receipt of the goods precedes receipt of the invoice, the storeroom clerk should segregate the new goods from the regular stock until the invoice arrives. Care should be taken never to issue materials which have not been properly priced because the billing of materials to departments are based on this price. This insures that the price charged to the control account for a particular item will be credited when it is issued from stock.

Issuing of materials. Materials are issued on the presentation of a formal requisition, properly signed by the department head and approved by the budgetary control unit.

To expedite the sending of requisitions directly to the storeroom for filling, an encumbrance authorization as outlined in chapter four should precede the requisitions showing the availability of funds. When the storeroom clerk receives a requisition, he will make delivery, price the requisition and reduce the receiving department's encumbrance authorization by the amount of the requisition. The procedure is simplified by having the price stamped on the materials. The storeroom clerk does not have to go to another source for the price and he is guaranteed that he has the same unit price as charged to the stores control account for any particular item.

At established intervals, the exhausted or terminated encumbrance authorizations accompanied by the requisitions are turned to the business office for posting to the stores control account. The requisitions are used as justifications for issuing a voucher for reimbursement. The transferring of accountability from the stores control account to the receiving departments maintains in balance the stores control account and the actual stores valuation.

Purchasing materials for the storeroom. All buying, if at all possible, is done through the institution's purchasing department. They are better set up to obtain materials at a fair price and faster because they have established contact with vendors.

A request for materials is sent periodically to the purchasing department requesting materials to replenish the stock that has reached minimum indicators. When the purchasing department issues a formal purchase order, it sends a carbon copy known as a receiving report to the storeroom. This is an indicator that the materials requested are ordered and when the merchandise is received, it becomes a receiving report for checking the merchandise. The receiving report should be filed in an outstanding order file until the merchandise is received.

When the merchandise is received in the storeroom, the quantity and quality is compared with the receiving report and any discrepancies noted thereon. When all the items on a receiving report have been received, the storeroom clerk signs and returns it to the business office so that the business officer will have the necessary justification for paying the order.

Checking the control. Periodically, physical inventories should be taken. This can be done without loss of too much time by unit piling. The number of units in storage and detailed descriptions can be dropped in taking the inventory. Valuation according to commodity groups or storage locations is all that is necessary. The periodic inventory is necessary to maintain the stores control account and the actual stores valuation in balance. Any deviation in the values are investigated and proper adjustments made accordingly.

2. ITEM CONTROL ACCOUNTING

As an institution grows in size, the supplies and materials that need to be stored on campus increases proportionately. As the items increase in number, the problem of accountability becomes harder to maintain. Control by item becomes necessary to maintain desired efficiency in the stores system. Item control will enable closer audit of particular items in stock which cannot be done as readily in Dollar Control Accounting.

The accounting control over inventories kept in the storerooms are secured through use of a general ledger called the stores control account and a subsidiary stores ledger. The stores control account is used to control and balance the subsidiary ledger. The subsidiary ledger is called the materials control account. It is here that the individual items stocked in the stores system is accounted for. The materials control account is kept in the form of a card index with a card for each item. The card shows the code symbol for the materials and its description, the unit, the location in stores, maximum-minimum stock quantities, and the ordering point. The card is ruled for entries to show all receipts, disbursements and available balances in stores by both item and value of item. This ledger is supported by the same documents that are used by the general ledger. The difference being that posting is done in the stores control account by total and in the materials control account by item.

The materials control account may be kept either in the business office or in the storeroom. In the latter case, the storeroom clerk is held responsible for the correct maintenance of the materials control account. To take advantage of the use of machine accounting, the materials control account is shifted to the business office as the materials become larger in number.

Issuing of materials. Materials are issued with the presentation of a formal requisition, properly signed by the department head and approved by the budgetary control unit. An encumbrance authorization for each department can be used as in Dollar Control Accounting to make possible the sending of requisitions directly to the stores department. The requisition should be processed through the materials control account before being filled in the storeroom. This method will allow only requisitions to be processed in the storeroom for which supplies are actually available. Unavailable items can be struck from the requisition and a reason given for so doing. This would also permit a completed copy of the requisition to be left with the requisitioning department and would allow the reduction of the encumbrance authorization before delivery is made. This will prevent the delivering of materials for which there are no funds available.

Purchasing materials for the storeroom. In item control accounting, requisitioning of supplies and materials to

replenish depleted stock is done from the materials control account where individual maximum-minimum quantity levels are established. When the stock level reaches the minimum level or ordering point, the storeroom clerk will issue a request to the purchasing department to order additional materials.

As goods are received at the storeroom, entries are made on the appropriate perpetual material control account cards. A receiving report which is a carbon copy of the purchase order should be used as the posting authority.

Checking the control. The checking of the control is done by taking a physical inventory. This is done to check the accuracy of the accounting records and to bring the subsidiary stores ledger into agreement with the stores control account. Since taking the physical inventory is more complicated in this system, it is best to take the inventory in sections. This is usually done by commodity group.

3. STORES RECORDS LOCATION

As pointed out in explaining item control accounting, there are different locations for keeping stores records. The location of the stores records will result in either decentralized or centralized control over the records. Decentralized control is obtained by maintaining the materials control account in the storeroom under the control of the storeroom clerk and the general ledger is maintained in the business office. In centralization, all the ledgers are

maintained in the business office. Centralization usually results with the establishment of mechanical accounting procedures. This makes possible uniform procedures, closer supervision and greater efficiency in operation.

In some institutions, the materials control account in the business office is maintained by the purchasing division. This is done to maintain a closer control by the purchasing division over the physical inventory of the storeroom.

To find out where institutions maintain their stores records, business officers were asked the location of their records. Since the general control ledger is a tool of the business office, only institutions using a materials control account would indicate the location of records in other locations. It was found that institutions used locations other than the business office in 60 per cent of the schools reporting their records' locations. This is a surprisingly high percentage when it is considered that dollar control accounting records are kept entirely in the business office. This type of accounting is included in the remaining 40 per cent that indicated that their records were kept in the business office. This indicates that item control accounting is widely used. In addition it was found that the percentage of use of the business office, storeroom and purchasing division was consistent as to the location of the stores records

regardless of the size of the enrollment group or the stores system used. This is shown in table XV and XVI.

TABLE XV

THE LOCATIONS OF STOREROOM RECORDS IN DIFFERENT ENROLLMENT GROUPS

The location used	Enrollment Groups			
	1-3000	3-5000	5-7000	7-10000
Business Office	32.4%	41.7%	28.0%	38.5%
Storeroom	52.7%	39.6%	64.0%	41.0%
Purchasing Office	2.7%	6.2%		10.3%
Didn't answer	12.2%	12.5%	8.0%	10.2%

4. INVENTORY PRICING

In operating a stores system determination is necessary as to whether materials should be charged out to using departments at actual cost or whether there should be a small mark-up to assist in making the system self-supporting. A mark-up system will transfer the cost of the privilege of having a storeroom on campus to the departments using the storeroom. If the cost of operating a storeroom is charged against a general institutional budget, department that do not use the storeroom will share in the cost of its operation. This is due to the fact that the funds available to departments will be smaller because the general institutional expense will be larger.

TABLE XVI

THE LOCATIONS OF STOREROOM RECORDS IN DIFFERENT STORES SYSTEMS

The location used	Stores System			
	Lab.	Gen.	Cen.	Div.
Business Office	30.0%	24.5%	46.5%	35.0%
Storeroom	40.0%	64.5%	43.6%	50.0%
Purchasing Office		2.2%	9.9%	5.0%
Didn't Answer	30.0%	8.8%		10.0%

Sixty-five per cent of the institutions that answered the survey question pertaining to inventory pricing do not mark-up the cost of materials. This is not a very high percentage when it is considered that 38 per cent of the institutions use a laboratory stores system where a mark-up system is not used because the cost of storing is a direct cost. Costs due to operation will occur in general, central, and division stores systems because storing is the primary function and all costs will be storing costs. There are several reasons for not marking up the cost of materials which can be used to justify inequality in the storeroom privileges.

First, it is difficult to determine and maintain a mark-up which will be equal to the cost of operation. Second, a mark-up system will complicate the accounting system. Third, valuation as a control will not work when a mark-up is used. And last, the cost of operation may not be enough to justify the benefits of a mark-up system.

As the enrollment of an institution increases the use of a mark-up system also increases. This is shown in table XVII. This increase is attributed to the fact that the cost of operating a storeroom increases because the size of the storeroom grows as the institution grows. Also as the enrollment grows the use of centrally controlled stores systems increases and the use of item control accounting also increases in use. A mark-up system works best in these stores systems and this accounting system.

TABLE XVII

INSTITUTIONS USING A MARK-UP SYSTEM ACCORDING TO ENROLLMENT GROUPS

Institution Use	Enrollment Groups				Ave. %
	1-3000	3-5000	5-7000	7-10000	
Yes	17.6%	35.4%	24.0%	56.4%	31.2%
No	68.9%	50.0%	72.0%	43.6%	59.1%
Didn't Answer	13.5%	14.6%	4.0%		9.7%

Question fifteen of the survey asked the business officers how they determine the mark-up of the materials if they had such a system. Cost of operation and ten per cent were the most popular answers. Five per cent and twenty per cent were next. The break down of the different answers are given in table XVIII. The results indicate that a definite percentage is established that is based on the cost of operation. Only in four cases was the mark-up indicated

for another purpose other than covering the cost of operation. These were to establish a reserve and to cover the loss due to theft and shrinkage.

5. INVENTORY COSTING

In our present price system, the prices of supplies and materials will fluctuate with the market. Several lots of a particular commodity may be purchased during a fiscal period at different unit prices. Because of this fact, the methods employed to value issues from inventory will give different interpretations of the inventory value of goods.

TABLE XVIII

WHAT DETERMINES A MARK-UP SYSTEM ACCORDING TO ENROLLMENT GROUPS

Determinate	Enrollment Groups 1-3000	3-5000	5-7000	7-10000	Total
23%			1		1
20%	2	2			4
17%		1			1
15%				3	3
12½%			1		1
10%	7	7	1	8	23
7%		1			1
5%	2	2	1	1	6
Cost of Operating.	2	4	2	6	14
Cost of operating plus 1% for a small reserve.				1	1
Cost plus 2%.				2	2
Mark-up enough to cover loss due to theft and shrinkage.				1	1
Total	13	17	6	22	58

The survey showed that definite costing methods are used in institutional accounting. The two most commonly used in institutional accounting are the "First-in, First-out" and the "Average" methods. Other systems mentioned were "Last-in, First-out" and "Actual cost" methods. The percentage using the last two methods were so small as shown in table XIX that any further elaboration is felt unnecessary.

TABLE XIX

THE COSTING SYSTEM USED IN INSTITUTIONS ACCORDING TO ENROLLMENT GROUPS

Method Used	Enrollment Group				Total
	1-3000	3-5000	5-7000	7-10000	
First-in, First-out	23.0%	27.1%	60.0%	41.0%	32.8%
Last-in, First-out	6.7%	12.5%	8.0%	10.3%	9.1%
Average Method	31.1%	39.6%	20.0%	35.9%	32.8%
Actual Cost Method	5.4%	4.2%	4.0%	5.1%	4.8%
No Particular Method	5.4%	2.1%	4.0%	2.6%	3.8%
Didn't Answer	28.4%	14.5%	4.0%	5.1%	16.7%

First-in, first-out method. Under the "first-in, first-out" method the materials will be used in the same order as received. The current withdrawals from the stores will consist of the portion of the inventory that has been longest in stock. This is advantageous when materials are subject to deterioration through aging, or where manufacturer's guarantees

are limited in time, or similar considerations. It is a satisfactory method of accounting where stock turnover is reasonably rapid and where normal fluctuations in materials costs can be absorbed in the present budget period.

Average method. This accounting method prices all withdrawals from inventory at the average unit price of all material in stock at the time, of the item concerned. The chief advantages are that it is based on continuous policy under which price fluctuations are evened out over the period of use. Proponents of this method consider it the most logical way of allocating material costs to operating accounts and evaluating an inventory. Others oppose it on the ground that it is not necessary for accurate results and that the clerical operation involved may be costly and increase the possibility of error in costing.

This method of costing works where a materials control account is used. It is necessary to have a perpetual inventory card from which to compute the average cost.

5. ESSENTIAL STOREROOM FORMS

Forms are tools to the storeroom clerk. He uses them daily in requesting materials to replenish his stock, as a basis for issuing materials, and to transfer accountability of issued materials to the departments.

The creation of too many forms should be avoided. It is important to have forms that are simple to understand but adequate to serve the purpose for which they are created.

At the end of the survey, the business officers were asked to send copies of their storeroom forms. There were a large number of forms returned with the questionnaires. From these forms, definite trends in form construction could be established.

It was found that institutions use a minimum number of forms. Encumbrance authorizations and material control ledger cards are not used as often as the stores requisitions. Forms are made on standard size paper and the layout is simple. There were a surprising number of snap-out type forms used. Snap-out forms are expensive but the use of the form can be defended by the time saved. They were mainly used for stores requisitions. They eliminate the time needed to insert carbon paper when duplicate copies of a form are desired.

The purchasing department's requests and purchase orders should be used to replenish depleted stock. The accounting departments interdepartmental transfer vouchers should be used to transfer accountability of materials. Encumbrance authorization forms, stores requisition forms and materials control ledger cards are the forms which need to be established for a storerooms operation. Samples of these forms are shown on the following pages.

Outline of storeroom procedures and policies. The successful operation of any stores system will be in direct proportion to the understanding of its functions by the

administrative officers and faculty. An outline covering established policies and procedures as approved by the administration of the school should be issued to every department. The outline should be reviewed from time to time and changes made as approved.

The outline should contain the following information: first, purpose of the outline; second, function of the storeroom; third, the policies of the storeroom; and fourth, the procedure for obtaining supplies from the storeroom.

Under the heading of storeroom policies, such topics as use of standard forms, emergency requisitions, petty purchases, delivery procedures and similar policy matters should be presented.

FORM I

SUGGESTED ENCUMBRANCE AUTHORIZATION

Blank State College

GENERAL STORES ENCUMBRANCE AUTHORIZATION

Date _____ No. _____

Requesting Department _____ Request Approval To Purchase _____

For The Period From _____ (Date) TO _____ (Date) In The Amount Of $_____ Requested By _____ (Commodity Group) (Signature)

Date	Requisition Number	Requisition Amount	Available Balance	Date	Requisition Number	Requisition Amount	Available Balance

Amount Approved $_____ Activity _____ Object _____ By _____

FORM II

SUGGESTED STORES REQUISITION

Blank State College

REQUISITION FOR SUPPLIES FROM GENERAL STORES

Date _____ NO. _____

Requisitioning Department _____ Deliver To: Bldg. _____ Room _____

E. A. Approval _____ Charge ____ Credit ____ Requisitioned By _____ (Signature)

Stock Number	Quantity	Description	Unit Price	Amount	

Received By _____ Total _____

FORM III

SUGGESTED MATERIALS CONTROL LEDGER CARD

Blank State College

Date	Ref. No.	Quantity				Value		Date	Ref. No.	Quantity				Value	
		Ord.	Rec'd	Issue	Bal	Unit	Bal			Ord.	Rec'd	Issue	Bal	Unit	Bal

CHAPTER VI

CONCLUSIONS

The storing of materials depends upon the needs of the institution. The institution's needs will vary with its size. Therefore, the size of the institution will have a direct effect on the policies and procedures of operating a storeroom. Definite policies and procedures are necessary regardless of the size or type of storing system used. This is because supplies and materials that are held in reserve for future use represent a form of investment and should be controlled as closely as cash and securities.

Central control storing has been found to be the best control method. This method of storing makes possible the use of specialists who can conduct the storerooms operation more efficiently. The disadvantage of central controlled storing is that it can become costly in maintaining the desired control. This can be avoided by using different forms of central control storing and different operational procedures.

The alternate to central control storing consists of innumerable little stockrooms in the various departments, each with its quota of spoilage and obsolescence. The interest of the departments rests with teaching, research, and maintenance. If the materials control is to be dispersed among them, the control of those materials waiting to be used is likely to be limited.

Central control storing will make possible supplies when they are needed, promotes standardization of materials, promotes effective buying by furnishing information of the previous materials use, and makes possible equitable allocation of material costs. In establishing a central stores system for a particular institution, only general recommendations can be made. Each institution has its own characteristics to which the stores system should be adapted. As presented in this paper definite trends in storing materials are associated with different enrollment groups. These trends makes possible a guide for establishing a stores department. Based on these trends and the study of the writer, the following general recommendations for operating a stores system are presented in chart form according to enrollment groups. These recommendations are presented in figure VI.

FIGURE VI

RECOMMENDATIONS FOR OPERATING A STORES SYSTEM
ACCORDING TO ENROLLMENT GROUPS

Operating Procedure Problems	Enrollment Groups			
	1000 to 3000	3000 to 5000	5000 to 7000	7000 to 10000
1. Should purchasing be centralized?	Yes	Yes	Yes	Yes
2. What type of stores system should be used?	General	General	Central	Division
3. What should determine the materials to be stored? (listed according to importance)	(All enrollment groups) 1. Continuous demand. 2. Savings from quantity buying. 3. Will ease the purchasing operation 4. To make possible standardization of materials. 5. Cost of storing.			
4. What materials should be stored?				
a. Office supplies	Yes	Yes	Yes	Yes
b. Janitorial supplies	Yes	Yes	Yes	Yes
c. Maintenance supplies	Yes	Yes	Yes	Yes
d. Cafeteria supplies	Optional	Optional	Optional	Optional
e. Classroom supplies	No	No	No	Yes
f. Office furniture	No	No	No	No

(cont'd.)

Operating Procedure Problems	Enrollment Groups			
	1000 to 3000	3000 to 5000	5000 to 7000	7000 to 10000
5. Should unit piling be practiced?	Yes	Yes	Yes	Yes
6. Should minimum indicators be used?	Yes	Yes	Not Necessary	Not Necessary
7. Should bin tags be used?	(All enrollment groups) Only in special situations			
8. Should maximum-minimum inventory levels be established?	Yes	Yes	Yes	Yes
9. How should maximum-minimum control be practiced?	Visual inspection and minimum indicators.	Visual inspection and minimum indicators.	Material control ledger cards	Material control ledger cards
10. How many employees should be used? (The number of employees indicated is based on the stores system recommended.)	1 or 2	1 to 3	1 to 3	2 to 4
11. To whom should the responsibility of the storeroom be delegated?	Procurement Head	Procurement Head	Subordinate of Procurement Head	Subordinate of Procurement Head
12. What authority should be necessary to issue materials from the storeroom?	(All enrollment groups) Issuing of materials should be based on a request from the department head and approved by the budgetary control unit as to availability of funds. Budgetary control approval should be done by using such devices as the Encumbrance Authorization and request limitations.			

(cont'd.)

Operating Procedure Problems	Enrollment Groups			
	1000 to 3000	3000 to 5000	5000 to 7000	7000 to 10000
13. Should stores catalogs be used?	(All enrollment groups) Only if desired and then by commodity groups most used.			
14. Should materials be delivered or called for?	Both	Both	Delivered	Delivered
15. What type of record control should be established?	Dollar control accounting	Dollar control accounting	Item control accounting	Item control accounting
16. Should an inventory price mark-up system be used?	No	No	Yes	Yes
17. What should the mark-up be?	(5000 to 10000 Enrollment Group) The cost of operation adjusted around 10% of the cost of inventory.			
18. In costing out materials, what method should be used?	First-in, First-out.	First-in First-out.	Average Method.	Average Method.

SELECTED BIBLIOGRAPHY

SELECTED BIBLIOGRAPHY

Baker, Percy. "Food Service Department Simplifies Storeroom Control," College and University Business. Vol. 15, No. 3, September 1953. 49 p.
The article presents a simple system of accounting based on valuation.

Blackwell, T. E. (ed.). College and University Business Administration. Vol. II. Washington, D. C.: American Council on Education, 1955. 3-14 pp.
The book presents a system of administration for institutions of higher education. One section is set aside for purchasing which covers general administrative policies for storing materials.

Christensen, William L. "Purchasing Forms and Procedures," Proceedings of the 32nd Annual Convention of the National Association of Educational Buyers, Hamilton: American Printing Co., 1953. 106-114 pp.
This paper summaries various institutions' forms used in procurement.

Hayes, Charles W. "Inventory Control: No Place For Guesswork," College and University Business. Vol. 2, No. 2, February 1947, 7 p.
This article discusses methods of operating a storeroom. A list of suggestions are presented for physical operation of a storeroom.

_____. "Organization and Operation of a Receiving and Stores Department," Proceedings of the 29th Annual Convention of the National Association of Educational Buyers. Athens; The Lawhead Press, Inc., 1950. 39-49 pp.
This paper contained information and recommendations for storing various supplies and materials. It explains the general operation of a stores system.

Heinritz, Stuart F. Purchasing; Principles and Applications. New York: Prentice-Hall, Inc., 1951. 196 pp.
This book contained information on proper purchasing methods. It is written with a manufacturing business in mind but the methods can be applied to colleges and universities.

Herbert, W. C. "Essential Purchasing Records and Forms in Small Institutions," Proceedings of the 31st Annual Convention of the National Association of Educational Buyers. Hamilton: American Printing Co., 1952. 103-104 pp.

This paper summaries the various forms used in small institutions.

Kimrey, R. R. "Receiving, Inspection and Follow-up of STORES are Components of a Continuing Operation; They Should not be Separated," College and University Business. Vol. 6, No. 1, January 1949. 14 p.

The article discusses the receiving system used at the University of Oklahoma.

Rhilinger, John F. "Inventories Purchase and Control," Proceedings of the 34th Annual Convention of the National Association of Educational Buyers, New York: National Association of Educational Buyers, 1955. 62-76 pp.

This paper was a general statement of the problems of storeroom operation. The latter part of the paper was a discussion by the members of the association.

Robbins, Leslie F. "Centralized Purchasing and Central Stores go Hand in Hand," College and University Business. Vol. 6, No. 5, May 1949. 14-15 pp.

The article contained information and justification on centralizing storing and purchasing. Complete control of the storeroom is delegated to the purchasing division.

Scheps, Clarence. Accounting for Colleges and Universities. Baton Rouge: Louisiana State University Press, 1949. 50 p.

This book was written to outline the accounting procedures for a institution of higher education.

United States Department of Health, Education and Welfare. Education Directory 1956-1957, Part 3. Washington: Government Printing Office, 1956.

This directory contains a listing of all the institutions which was in operation during the 1956-1957 school year. There is related information for each institution in the directory.

APPENDIX

APPENDIX A

QUESTIONNAIRE

1. What was the 1956 fall enrollment of your institution? _____

2. Do you have centralized purchasing? Yes_____ No_____

3. Where do you store your materials that are held in reserve?

   _____ a. Materials are stored in one building and under the supervision of a single storekeeper.

   _____ b. A decentralized stores system with the actual physical control of the commodities under the control of the various departments where the supplies are used.

   _____ c. Other_____

4. What items do you stock in your stores department?

   _____ a. Office supplies - paper, ink, stencils, carbon paper, etc.

   _____ b. Classroom supplies - chemicals, typewriters, and other apparatus.

   _____ c. Maintenance supplies for the department of buildings and grounds - pipe, paint, repair parts, etc.

   _____ d. Janitorial supplies - soap, wax, mops, toilet paper, and light bulbs.

   _____ e. Cafeteria or dining hall supplies such as food,

china, silver, trays, pots, pans, etc.

_____ f. Other_____

Please answer the following question by marking the statement that best answers the question with a one and the second best with a two and so on until all the answers are evaluated. If you have a better answer than the ones given, please write it in and evaluate it with the others.

5. What determines the materials to be stocked in your storeroom?

_____ a. Only those items that are adaptable to institution-wide standardization.

_____ b. Those items that will ease the purchasing operation.

_____ c. Those items that are in continuous demand by several departments.

_____ d. Materials on which large savings can be made by quantity purchases.

_____ e. The cost of maintaining the item stocked will be less than 10% of its cost.

_____ f. Other_____

6. Do you use a stock catalog with numberical symbols by which items can be requisitioned from your storeroom?

Yes_____ No_____

7. How do your departments receive the materials requisitioned from the stores department?

_____ a. The stores department delivers materials to the requisitioning department.

_____ b. The departments call at the storeroom for their supplies.

8. What is your procedure for requisitioning materials from your storeroom? _____

_____

9. How many employees do you have working in your stores department? _____

10. Upon whom is the responsibility placed for maintaining your storeroom? _____
(title of person)

11. In maintaining inventories do you use established maximum and minimum quantities as a control? Yes____ No_____

12. Are bin tags or shelf tags used in your storeroom to maintain a physical count? Yes____ No____

13. Where do you keep the records of the storeroom transactions?

_____ a. The storeroom.

_____ b. The business office.

_____ c. Others_____

14. Do you have a mark-up system in costing out materials to cover the costs in the operation of your stores department? Yes____ No_____

15. How do you determine the mark-up system if you have one?

_____

_____

16. What system of costing do you use when materials are transferred from the stores department to other departments?

_____ a. First-in--first-out method.

_____ b. Last-in--First-out method.

_____ c. Average method.

_____ d. Other_____

If it is possible, I would appreciate receiving any forms used in connection with your stores department.

Do you have any recommendations that might be of additional help in operating a stores department?

APPENDIX B

TABULATIONS OF THE QUESTIONNAIRE

Question 1.

TABLE XX

THE 1956 FALL ENROLLMENT

Enrollment Groups	Number of Institutions
1000 to 3000	74
3000 to 5000	48
5000 to 7000	25
7000 to 10000	39
All enrollments	186

Question 2.

TABLE XXI

INSTITUTIONS HAVING CENTRALIZED PURCHASING

Possible Answers	Enrollment group				Total
	1-3000	3-5000	5-7000	7-10000	
Yes	65	44	22	39	170
No	6	3	3		12
Partial	3	1			4
	74	48	25	39	186

Question 3. Tabulation presented in chapter two.

Question 4. THE NUMBER OF INSTITUTIONS STORING DIFFERENT TYPES OF MATERIALS BY ENROLLMENT GROUP

TABLE XXII

1000 TO 3000 ENROLLMENT GROUP

Type of Materials	Stores System				Total
	Lab.	Gen.	Cen.	Div.	
Office supplies	20	23	15	4	62
Classroom supplies	7	13	3	2	25
Maintenance supplies	16	22	12	4	54
Janitorial supplies	5	16		2	23
Didn't answer		4	1		5
Possible answers	20	29	21	4	74

TABLE XXIII

3000 TO 5000 ENROLLMENT GROUP

Type of Materials	Stores System				Total
	Lab.	Gen.	Cen.	Div.	
Office supplies	17	9	8	6	40
Classroom supplies	7	5		3	15
Maintenance supplies	17	10	3	6	36
Janitorial supplies	18	10	5	6	39
Cafeteria supplies	5	10	1	5	21
Others	1				1
Didn't answer		1			1
Possible answers	21	12	9	6	48

TABLE XXIV

5000 TO 7000 ENROLLMENT GROUP

Type of Materials	Stores System				Total
	Lab.	Gen.	Cen.	Div.	
Office supplies	11	3	6	1	21
Classroom supplies	2	2	3		7
Maintenance supplies	11	3	5	1	20
Janitorial supplies	13	3	5	1	22
Cafeteria supplies	3	2			5
Didn't answer					
Possible answers	13	5	6	1	25

TABLE XXV

7000 TO 10000 ENROLLMENT GROUP

Type of Materials	Stores System				Total
	Lab.	Gen.	Cen.	Div.	
Office supplies	15	3	6	9	33
Classroom supplies	10	1	3	8	22
Maintenance supplies	16	4	5	8	33
Janitorial supplies	17	4	6	8	35
Cafeteria supplies	8	3	1	6	18
Others	1				1
Didn't answer					
Possible answers	17	4	9	9	39

Question 5. THE IMPORTANCE OF REASONS FOR STORING MATERIALS BY ENROLLMENT GROUP

TABLE XXVI

1000 TO 3000 ENROLLMENT GROUP

Reasons for Storing	Degree of Importance						
	1st	2nd	3rd	4th	5th	6th	0
Standardization	12	12	9	(19)	1	0	21
Ease the Purchasing Operation	2	12	(19)	13	4	0	24
Continuous Demand	(40)	14	6	0	0	0	14
Quantity buying	9	(16)	18	10	0	0	21
Storing Costs	0	0	0	3	(35)	2	34
Others	0	1	0	1	0	0	72

TABLE XXVII

3000 TO 5000 ENROLLMENT GROUP

Reasons for Storing	Degree of Importance						
	1st	2nd	3rd	4th	5th	6th	0
Standardization	13	3	8	(6)	5	0	13
Ease the Purchasing Operation	7	5	(9)	7	3	0	17
Continuous Demand	(20)	14	5	3	0	0	6
Quantity Buying	5	(17)	6	5	1	0	14
Storing Costs	0	0	3	4	(16)	3	22
Others	1	1	1	0	1	0	44

TABLE XXVIII

5000 TO 7000 ENROLLMENT GROUP

Reasons for Storing	Degree of Importance						
	1st	2nd	3rd	4th	5th	6th	0
Standardization	6	6	2	5	1	0	5
Ease the Purchasing Operation	1	5	5	8	0	0	6
Continuous Demand	16	4	2	1	0	0	2
Quantity Buying	1	8	11	3	0	0	2
Storing Costs	0	0	0	5	13	0	7

TABLE XXIX

7000 TO 10000 ENROLLMENT GROUP

Reasons for Storing	Degree of Importance						
	1st	2nd	3rd	4th	5th	6th	0
Standardization	7	3	7	10	3	0	9
Ease the Purchasing Operation	0	3	15	12	0	0	9
Continuous Demand	25	9	4	0	0	0	1
Quantity Buying	6	21	5	1	0	0	6
Storing Costs	0	1	0	2	17	0	19

Question 6. INSTITUTIONS USING STOCK CATALOGS BY ENROLLMENT GROUP

TABLE XXX

1000 TO 3000 ENROLLMENT GROUP

Institution Use	Stores System				Total
	Lab.	Gen.	Cen.	Div.	
Yes	0	2	5	1	8
No	24	17	15	3	59
Didn't answer	5	2			7
Possible answers	29	21	20	4	74

TABLE XXXI

3000 TO 5000 ENROLLMENT GROUP

Institution Use	Stores System				Total
	Lab.	Gen.	Cen.	Div.	
Yes	0	1	8	2	11
No	11	8	13	4	36
Didn't answer	1				1
Possible answers	12	9	21	6	48

TABLE XXXII

5000 TO 7000 ENROLLMENT GROUP

Institution Use	Stores System				
	Lab.	Gen.	Cen.	Div.	Total
Yes	0	2	3	0	5
No	5	4	10	1	20
Didn't answer	0	0	0	0	0
Possible answers	5	6	13	1	25

TABLE XXXIII

7000 TO 10000 ENROLLMENT GROUP

Institution Use	Stores Systems				
	Lab.	Gen.	Cen.	Div.	Total
Yes	1	3	8	5	17
No	2	5	9	4	20
Didn't answer	1	1	0	0	2
Possible answers	4	9	17	9	39

Question 7. THE METHOD USED IN DELIVERYING MATERIALS IN DIFFERENT STORES SYSTEMS ACCORDING TO ENROLLMENT GROUPS

TABLE XXXIV

1000 TO 3000 ENROLLMENT GROUP

Method Used	Stores System				Total
	Lab.	Gen.	Cen.	Div.	
Delivered to dept.	2	7	8	1	18
Dept calls for materials	19	10	5	3	37
Combination of above	1	3	7		11
Didn't answer		7	1		8
Possible answers	29	21	20	4	74

TABLE XXXV

3000 TO 5000 ENROLLMENT GROUP

Method Used	Stores System				Total
	Lab.	Gen.	Cen.	Div.	
Delivered to dept.	4	6	14	1	25
Dept. calls for materials	4	2	6	2	14
Combination of above	1	1	1	3	6
Didn't answer	3				3
Possible answers	12	9	21	6	48

TABLE XXXVI

5000 TO 7000 ENROLLMENT GROUP

Method Used	Stores System				Total
	Lab.	Gen.	Cen.	Div.	
Delivered to dept.		3	6		9
Dept. calls for materials	3	1	1	1	6
Combination of above	2	2	6		10
Didn't answer					
Possible answers	5	6	13	1	25

TABLE XXXVII

7000 TO 10000 ENROLLMENT GROUP

Method Used	Stores System				Total
	Lab.	Gen.	Cen.	Div.	
Delivered to dept.	1	3	10	3	17
Dept. calls for materials	1	2		1	4
Combination of above	2	4	7	5	18
Didn't answer					
Possible answers	4	9	17	9	39

Question 8. NO TABULATION MADE

Question 9. THE NUMBER OF EMPLOYEES USED IN DIFFERENT STORES SYSTEMS ACCORDING TO ENROLLMENT GROUPS

TABLE XXXVIII

1000 TO 3000 ENROLLMENT GROUP

Number of Employees	Stores System				Total
	Lab.	Gen.	Cen.	Div.	
1	3	4	5	2	14
2	3	3	7		13
3	5	3	3	1	12
4	2	1	1		4
5		1	1		2
6			2	1	3
9		1			1
0	6				6
Didn't answer	10	8	1		19

TABLE XXXIX

3000 TO 5000 ENROLLMENT GROUP

Number of Employees	Stores System				Total
	Lab.	Gen.	Cen.	Div.	
1		1	2		3
2	4	1	9	1	15
3		2	3		5
4			4		4
5	1	2	2	2	7
6			1	1	2
8		1			1
9				1	1
10		1			1
20				1	1
0	2				2
Didn't answer	5	1			6

TABLE XL

5000 TO 7000 ENROLLMENT GROUP

Number of Employees	Stores System				Total
	Lab.	Gen.	Cen.	Div.	
1		1	2		3
2		1	5		6
3		1	2		3
4	1		1		2
5		1	1		2
6		1			1
9	1		1		2
Didn't answer	3	1	1	1	6

TABLE XLI

7000 TO 10000 ENROLLMENT GROUP

Number of Employees	Stores System				Total
	Lab.	Gen.	Cen.	Div.	
1		1	2	1	4
2		2	3		5
3		1	5		6
4		2	1		3
5		1		1	2
6	1			1	2
7	1				1
8			1	1	2
9				1	1
10			1	1	2
11				1	1
14			1		1
15		1			1
20			1		1
23				1	1
25			1	1	2
35		1			1
Didn't answer	2		1		3

Question 10. TABULATION PRESENTED IN CHAPTER FOUR

Question 11. INSTITUTIONS USING MAXIMUM AND MINIMUM QUANTITIES CONTROLS IN DIFFERENT STORES SYSTEMS ACCORDING TO ENROLLMENT GROUPS

TABLE XLII

1000 TO 3000 ENROLLMENT GROUP

Institution Use	Stores System				Total
	Lab.	Gen.	Cen.	Div.	
Yes	4	12	14	3	33
No	15	5	6	1	27
Didn't answer	10	4			14
Possible answers	29	21	20	4	74

TABLE XLIII

3000 TO 5000 ENROLLMENT GROUP

Institution Use	Stores System				Total
	Lab.	Gen.	Cen.	Div.	
Yes	2	7	11	5	25
No	6	1	8	1	16
Didn't answer	4	1	2		7
Possible answers	12	9	21	6	48

TABLE XLIV

5000 TO 7000 ENROLLMENT GROUP

Institution Use	Stores System				Total
	Lab.	Gen.	Cen.	Div.	
Yes	3	3	11		17
No	1	2	2		5
Didn't answer	1	1		1	3
Possible answers	5	6	13	1	25

TABLE XLV

7000 TO 10000 ENROLLMENT GROUP

Institution Use	Stores System				Total
	Lab.	Gen.	Cen.	Div.	
Yes	2	9	15	7	33
No			2	2	4
Didn't answer	2				2
Possible answers	4	9	17	9	39

Question 12. INSTITUTIONS USING BIN TAGS IN DIFFERENT STORES SYSTEMS ACCORDING TO ENROLLMENT GROUPS

TABLE XLVI

1000 TO 3000 ENROLLMENT GROUP

Institution Use	Stores System				Total
	Lab.	Gen.	Cen.	Div.	
Yes		6	9		15
No	21	11	11	4	47
Didn't answer	8	4			12
Possible answers	29	21	20	4	74

TABLE XLVII

3000 TO 5000 ENROLLMENT GROUP

Institution Use	Stores System				Total
	Lab.	Gen.	Cen.	Div.	
Yes	1	1	6	3	11
No	7	6	13	3	29
Didn't answer	4	2	2		8
Possible answers	12	9	21	6	48

TABLE XLVIII

5000 TO 7000 ENROLLMENT GROUP

Institution Use	Stores System				Total
	Lab.	Gen.	Cen.	Div.	
Yes	1	1	6		8
No	3	5	7		15
Didn't answer	1			1	2
Possible answers	5	6	13	1	25

TABLE XLIX

7000 TO 10000 ENROLLMENT GROUP

Institution Use	Stores System				Total
	Lab.	Gen.	Cen.	Div.	
Yes	2	1	4	2	9
No		8	13	7	28
Didn't answer	2				2
Possible answers	4	9	17	9	39

Question 13. THE LOCATIONS OF STOREROOM TRANSACTION RECORDS IN DIFFERENT STORES SYSTEMS ACCORDING TO ENROLLMENT GROUPS

TABLE L

1000 TO 3000 ENROLLMENT GROUP

The location Used	Stores System				Total
	Lab.	Gen.	Cen.	Div.	
Storeroom	7	8	8	1	24
Business Office	12	4	7	1	24
Combination of above	3	6	5	1	15
Other		1		1	2
Didn't answer	7	2			9
Possible answers	29	21	20	4	74

TABLE LI

3000 TO 5000 ENROLLMENT GROUP

The location used	Stores System				Total
	Lab.	Gen.	Cen.	Div.	
Storeroom	5	1	13	1	20
Business office	2	5	1	3	11
Combination of above		2	4	2	8
Other			3		3
Didn't answer	5	1			6
Possible answers	12	9	21	6	48

TABLE LII

5000 TO 7000 ENROLLMENT GROUP

The location used	Stores System				Total
	Lab.	Gen.	Cen.	Div.	
Storeroom	1	1	5		7
Business office	3	3	3		9
Combination of above		2	5		7
Other					
Didn't answer	1			1	2
Possible answers	5	6	13	1	25

TABLE LIII

7000 TO 10000 ENROLLMENT GROUP

The location used	Stores System				Total
	Lab.	Gen.	Cen.	Div.	
Storeroom	2	1	7	5	15
Business office		3	5	1	9
Combination of above		4	1	2	7
Other			4		4
Didn't answer	2	1		1	4
Possible answers	4	9	17	9	39

Question 14. INSTITUTIONS USING A MARK-UP SYSTEM IN DIFFERENT STORES SYSTEMS ACCORDING TO ENROLLMENT GROUPS

TABLE LIV

1000 TO 3000 ENROLLMENT GROUP

Institution Use	Stores System				Total
	Lab.	Gen.	Cen.	Div.	
Yes	4	4	3	2	13
No	18	14	17	2	51
Didn't answer	7	3			10
Possible answers	29	21	20	4	74

TABLE LV

3000 TO 5000 ENROLLMENT GROUP

Institution Use	Stores System				Total
	Lab.	Gen.	Cen.	Div.	
Yes	3	4	7	3	17
No	4	4	13	3	24
Didn't answer	5	1	1		7
Possible answers	12	9	21	6	48

TABLE LVI

5000 TO 7000 ENROLLMENT GROUP

Institution Use	Stores System				Total
	Lab.	Gen.	Cen.	Div.	
Yes	1	2	2	1	6
No	3	4	11		18
Didn't answer	1				1
Possible answers	5	6	13	1	25

TABLE LVII

7000 TO 10000 ENROLLMENT GROUP

Institution Use	Stores System				Total
	Lab.	Gen.	Cen.	Div.	
Yes	3	4	8	7	22
No	1	5	9	2	17
Didn't answer					
Possible answers	4	9	17	9	39

Question 15. TABULATION PRESENTED IN CHAPTER FIVE

Question 16. THE COSTING SYSTEM USED IN INSTITUTIONS IN DIFFERENT STORES SYSTEMS ACCORDING TO ENROLLMENT GROUPS

TABLE LVIII

1000 TO 3000 ENROLLMENT GROUP

Costing System Used	Stores System				Total
	Lab.	Gen.	Cen.	Div.	
First-in, first-out	6	6	4	1	17
Last-in, first-out	1	2	2		5
Average method	6	5	11	1	23
Cost	1	1		2	4
None	1	2	1		4
Didn't answer	14	5	2		21
Possible answers	29	21	20	4	74

TABLE LIX

3000 TO 5000 ENROLLMENT GROUP

Costing System Used	Stores System				Total
	Lab.	Gen.	Cen.	Div.	
First-in, first-out			11	2	13
Last-in, first-out	2	1	3		6
Average method	3	6	6	4	19
Cost	1	1			2
None	1				1
Didn't answer	5	1	1		7
Possible answers	12	9	21	6	48

TABLE LX

5000 TO 7000 ENROLLMENT GROUP

Costing System Used	Stores System				Total
	Lab.	Gen.	Cen.	Div.	
First-in, first-out	4	4	6	1	15
Last-in, first-out		1	1		2
Average method			5		5
Cost		1			1
None			1		1
Didn't answer	1				1
Possible answers	5	6	13	1	25

TABLE LXI

7000 TO 10000 ENROLLMENT GROUP

Costing System Used	Stores System				Total
	Lab.	Gen.	Cen.	Div.	
First-in, first-out		4	9	3	16
Last-in, first-out		3		1	4
Average method	3	2	6	3	14
Cost			1	1	2
None				1	1
Didn't answer	1		1		2
Possible answers	4	9	17	9	39

APPENDIX C

LIST OF COLLEGES AND UNIVERSITIES BY STATE TO WHOM QUESTIONNAIRES WERE SENT

* - Indicates questionnaire returned

Alabama
- *Alabama Agricultural and Mechanical College, Normal
- *Alabama Polytechnic Institute, Auburn
- Alabama State College, Montgomery
- *Howard College, Birmingham
- *State Teachers College, Jacksonville
- *Tuskegee Institute, Tuskegee
- *University of Alabama, University

Arizona
- *Arizona State College, Tempe
- *Phoenix College, Phoenix
- *University of Arizona, Tucson

Arkansas
- Arkansas State College, State College
- Arkansas State Teachers College, Conway
- University of Arkansas, Fayetteville

California
- *Bakersfield College, Bakersfield
- *California State Polytechnic College, San Luis Obispo
- Chico State College, Chico
- *City College of San Francisco, San Francisco
- Clarence W. Pierce School of Agriculture, Canoga Park
- College of San Mateo, San Mateo
- East Contra Costa College, Concord
- *El Camino College, El Camino College
- *Fresno State College, Fresno
- Glendale College, Glendale
- Golden Gate College, San Francisco
- *Long Beach State College, Long Beach
- *Los Angeles State College of Applied Arts and Sciences, Los Angeles
- *Mount San Antonio College, Pomona
- Napa College, Napa
- Oceanside-Carlsbad College, Oceanside
- Orange Coast College, Costa Mesa
- *Pasadena City College, Pasadena
- *Sacramento State College, Sacramento

California (cont.)
*San Bernardino Valley College, San Bernardino
*San Diego State College, San Diego
*San Francisco State College, San Francisco
San Jose State College, San Jose
*Santa Monica City College, Santa Monica
*Stanford University, Stanford
University of San Francisco, San Francisco

Colorado
Colorado Agricultural and Mechanical College, Fort Collins
*Colorado State College of Education, Greeley
*University of Colorado, Boulder
*University of Denver, Denver

Connecticut
Hillyer College, Hartford
*New Haven State Teachers College, New Haven
*Teachers College of Connecticut, New Britain
*University of Bridgeport, Bridgeport
*University of Connecticut, Storrs
*Yale University, New Haven

Delaware
*University of Delaware, Newark

District of Columbia
*American University, Washington
*Catholic University of America, Washington
*George Washington University, Washington
*Georgetown University, Washington
Howard University, Washington

Florida
*Florida Agricultural and Mechanical University, Tallahassee
Florida Southern College, Lakeland
*Florida State University, Tallahassee
*University of Miami, Coral Gables

Georgia
*Emory University, Emory University
*Georgia Institute of Technology, Atlanta

Hawaii
*University of Hawaii, Honolulu

Idaho
*Idaho State College, Pocatello
*University of Idaho, Moscow

Illinois

*Augustana College, Rock Island
Ball State Teachers College, Muncie
*Bradley University, Peoria
*Chicago Teachers College, Chicago
*DePaul University, Chicago
*Eastern Illinois State College, Charleston
*Illinois Institute of Technology, Chicago
*Illinois State Normal University, Normal
*Loyola University, Chicago
*Northern Illinois State Teachers College, De Kalb
Roosevelt University, Chicago
*Southern Illinois University, Carbondale
University of Chicago, Chicago
Western Illinois State College, Macomb
*Wheaton College, Wheaton

Indiana

*Butler University, Indianapolis
*DePauw University, Greencastle
*Evansville College, Evansville
*Indiana State Teachers College, Terre Haute
University of Notre Dame, Notre Dame
Valparaiso University, Valparaiso

Iowa

*Drake University, Des Moines
*Iowa State College of Agriculture and Mechanic Arts, Ames
*Iowa Wesleyan College, Mount Pleasant
*State University of Iowa, Iowa City

Kansas

Kansas State College of Agriculture and Applied Science, Manhattan
*Kansas State Teachers College, Emporia
*Kansas State Teachers College, Pittsburg
Municipal University of Wichita, Wichita
*University of Kansas, Lawrence
*Washburn University of Topeka, Topeka

Kentucky

*Eastern Kentucky State College, Richmond
*Murray State College, Murray
*University of Kentucky, Lexington
*University of Louisville, Louisville
*Western Kentucky State College, Bowling Green

Louisiana

*Centenary College, Shreveport
*Grambling College, Grambling

Louisiana (cont.)
*Louisiana Polytechnic Institute, Ruston
*Louisiana State University and Agricultural and Mechanical College, University Station, Baton Rouge
Loyola University, New Orleans
Northeast Louisiana State College, Monroe
*Northwestern State College of Louisiana, Natchitoches
Southern University and Agricultural and Mechanical College, Baton Rouge
*Southwestern Louisiana Institute, Lafayette
*Tulane University of Louisiana, New Orleans

Maine
University of Maine, Orono

Maryland
*John Hopkins University, Baltimore
*Morgan State College, Baltimore
University of Baltimore, Baltimore

Massachusetts
*Boston College, Chestnut Hill
*College of the Holy Cross, Worcester
*Massachusetts Institute of Technology, Cambridge
Radcliffe College, Cambridge
Simmons College, Boston
*Smith College, Northampton
Tufts University, Medford
*University of Massachusetts, Amherst
*Wellesley College, Wellesley

Michigan
*Calvin College, Grand Rapids
*Central Michigan College of Education, Mount Pleasant
*Detroit Institute of Technology, Detroit
*General Motors Institute, Flint
Henry Ford Community College, Dearborn
Michigan College of Mining and Technology, Houghton
*Michigan State Normal College, Ypsilanti
University of Detroit, Detroit
*Western Michigan College of Education, Kalamazoo

Minnesota
College of St. Catherine, St. Paul
Macalester College, St. Paul
*State Teachers College, Mankato
State Teachers College, St. Cloud

Mississippi
*Mississippi College, Clinton
Mississippi Southern College, Hattiesburg

Mississippi (cont.)
*Mississippi State College, State College
*University of Mississippi, University

Missouri
*Central Missouri State College, Warrensburg
*Northeast Missouri State Teachers College, Kirksville
*St. Louis University, St. Louis
*Southeast Missouri State College, Cape Girardeau
Southwest Missouri State College, Springfield
Stephens College, Columbia
*University of Kansas City, Kansas City
*University of Missouri, Columbia

Montana
*Montana State College, Bozeman
*Montana State University, Missoula

Nebraska
*Creighton University, Omaha
*Municipal University of Omaha, Omaha
*University of Nebraska, Lincoln

Nevada
*University of Nevada, Reno

New Hampshire
*Dartmouth College, Hanover
*University of New Hampshire, Durham

New Jersey
Fairleigh Dickinson University, Rutherford
New Jersey State Teachers College, Newark
New Jersey State Teachers College, Upper Montclair
*Newark College of Engineering, Newark
*Princeton University, Princeton
Rider College, Trenton
St. Peter's College, Jersey City
Seton Hall University, South Orange
*Stevens Institute of Technology, Hoboken
Upsala College, East Orange

New Mexico
*New Mexico College of Agriculture and Mechanic Arts, State College
*University of New Mexico, Albuquerque

New York
Adelphi College, Garden City
Canisius College, Buffalo
Colgate University, Hamilton

New York (cont.)
Cooper Union, New York
*Cornell University, Ithaca
Fordham University, New York
Hofstra College, Hempstead, Long Island
Iona College, New Rochelle
*Long Island University, Brooklyn
*Manhattan College, New York
New York City Community College of Applied Arts and Sciences, Brooklyn
*Pace College, New York
*Polytechnic Institute of Brooklyn, Brooklyn
Pratt Institute, Brooklyn
Queens College of the City of New York, Flushing
*Rensselaer Polytechnic Institute, Troy
*Rochester Institute of Technology, Rochester
Russell Sage College, Troy
*St. John's University, Brooklyn
*Agricultural and Technical Institute at Farmingdale, Farmingdale
*College for Teachers at Albany, Albany
College for Teachers at Buffalo, Buffalo
Teachers College at Cortland, Cortland
*Union College and University, Schenectady
*University of Buffalo, Buffalo
*University of Rochester, Rochester

North Carolina
*Agricultural and Technical College of North Carolina, Greensboro
Appalachian State Teachers College, Boone
*Duke University, Durham
East Carolina College, Greenville
University of North Carolina at Chapel Hill, Chapel Hill
State College of Agriculture and Engineering, Raleigh
Woman's College, Greensboro

North Dakota
North Dakota Agricultural College, Fargo
*University of North Dakota, Grand Forks

Ohio
*Bowling Green State University, Bowling Green
*Case Institute of Technology, Cleveland
*Penn College, Cleveland
John Carroll University, Cleveland
*Kent State University, Kent
*Miami University, Oxford
*Oberlin College, Oberlin
*Ohio University, Athens

Ohio (cont.)
*Ohio Wesleyan University, Delaware
University of Akron, Akron
*University of Dayton, Dayton
*University of Toledo, Toledo
*Western Reserve University, Cleveland
Xavier University, Cincinnati
Youngstown University, Youngstown

Oklahoma
*East Central State College, Ada
*Oklahoma City University, Oklahoma City
Southeastern State College, Durant
Southwestern State College, Weatherford
*University of Oklahoma, Norman
University of Tulsa, Tulsa

Oregon
Oregon State College, Corvallis
*Portland State College, Portland
*University of Oregon, Eugene

Pennsylvania
*Bucknell University, Lewisburg
*Carnegie Institute of Technology, Pittsburgh
Drexel Institute of Technology, Philadelphia
*Duquesne University, Pittsburgh
LaSalle College, Philadelphia
Lehigh University, Bethlehem
*St. Joseph's College, Philadelphia
State Teachers College, Indiana
State Teachers College, West Chester
*University of Scranton, Scranton
Villanova University, Villanova

Rhode Island
*Brown University, Providence
*Providence College, Providence
*Rhode Island College of Education, Providence
*University of Rhode Island, Kingston

South Carolina
Bob Jones University, Greenville
Clemson Agricultural College, Clemson
South Carolina State College, Orangeburg
*University of South Carolina, Columbia

South Dakota
*South Dakota State College of Agriculture and Mechanic Arts, Brookings

Tennessee

*East Tennessee State College, Johnson City
Memphis State College, Memphis
Middle Tennessee State College, Murfreesboro
Tennessee Agricultural and Industrial State University, Nashville
Tennessee Polytechnic Institute, Cookeville
*University of Tennessee, Knoxville
*Vanderbilt University, Nashville

Texas

*Abilene Christian College, Abilene
*Baylor University, Waco
Del Mar College, Corpus Christi
*East Texas State Teachers College, East Texas Station, Commerce
Lamar State College of Technology, Beaumont
North Texas State College, Denton
Sam Houston State Teachers College, Huntsville
*San Antonio Union Junior College, San Antonio
*Southern Methodist University, Dallas
*Agricultural and Mechanical College of Texas, College Station
Arlington State College, Arlington
Prairie View Agricultural and Mechanical College, Prairie View
*Texas Christian University, Fort Worth
*Texas College of Arts and Industries, Kingsville
Texas Southern University, Houston
Texas Technological College, Lubbock
Trinity University, San Antonio
*West Texas State College, Canyon

Utah

*Brigham Young University, Provo
*University of Utah, Salt Lake City
*Utah State Agricultural College, Logan
*Weber College, Ogden

Vermont

*University of Vermont and State Agricultural College, Burlington

Virginia

*College of William and Mary, Williamsburg
*University of Richmond, Richmond
*Virginia Polytechnic Institute, Blacksburg
*Virginia State College, Petersburg

Washington
Seattle University, Seattle
*State College of Washington, Pullman

West Virginia
*Marshall College, Huntington
*Morris Harvey College, Charleston
*West Virginia University, Morgantown

Wisconsin
*Marquette University, Milwaukee
Wisconsin State College, Milwaukee

Wyoming
University of Wyoming, Laramie